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Gas Journal

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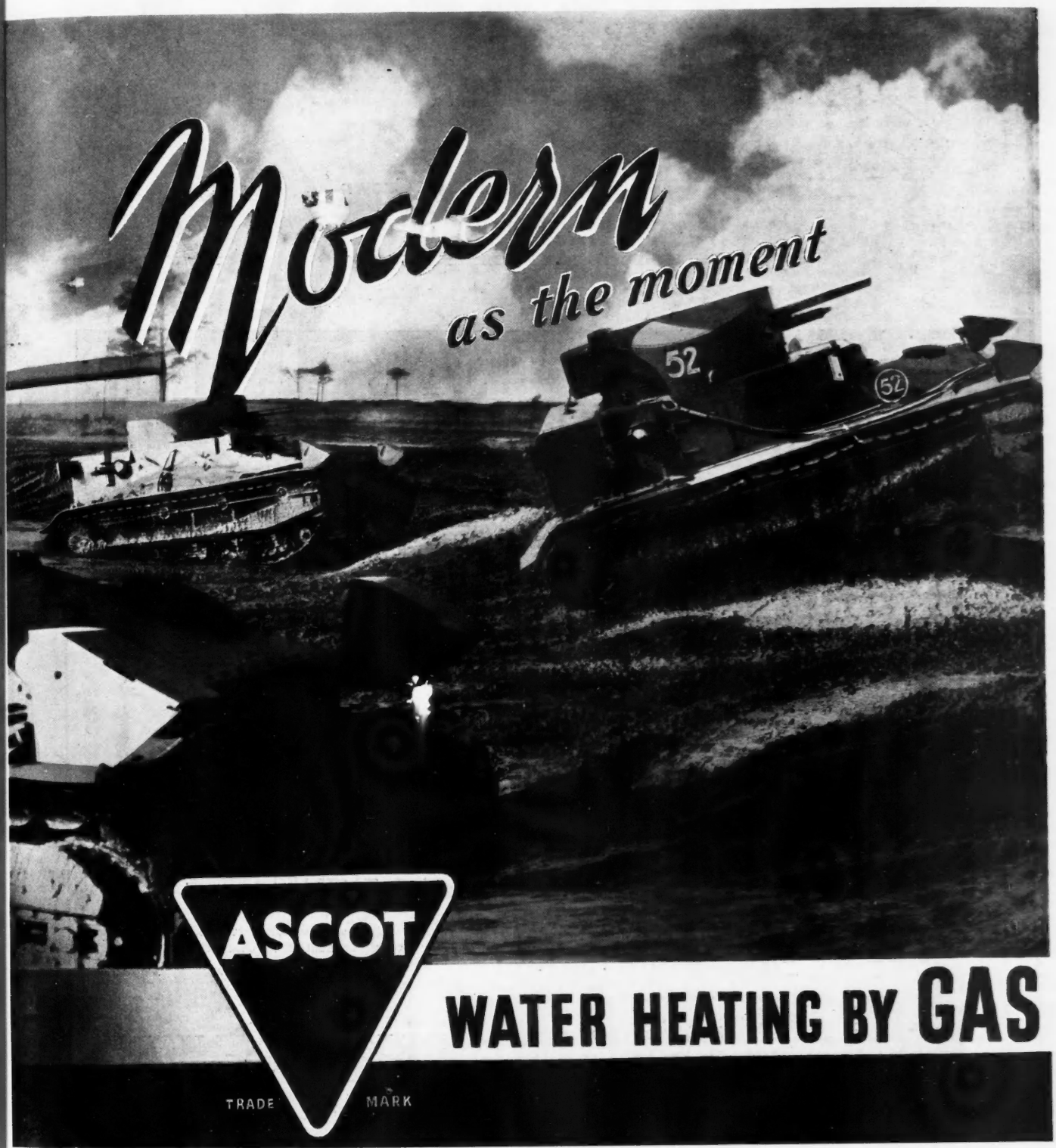
AUG 15 1941

Vol. 235. 93rd Year. LONDON, JULY 16, 1941. Registered as a Newspaper No. 4078. Price 1/-



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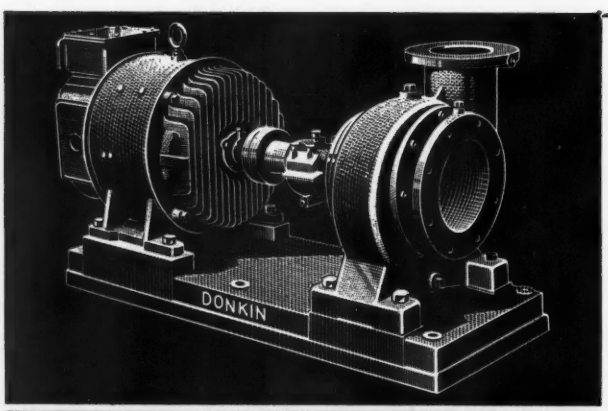

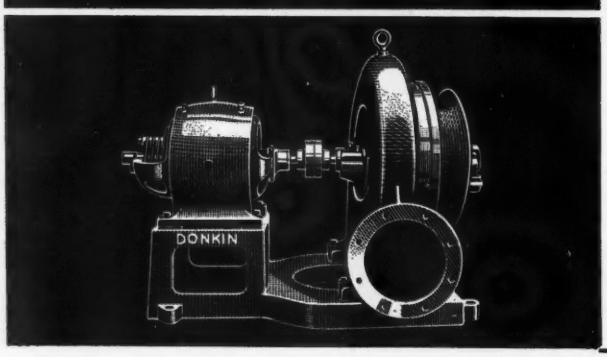

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CONTENTS

EDITORIAL NOTES

Coal 91
A Woman's View of Standardization .. 91
Fraternity in Wartime 92

Awards for Gallantry 92
Personal 92
Obituary 92

1941 "Journal" Directory 92
Letters to the Editor 92
Univer of Leeds 93
Parkinson & Cowan, Ltd. 93

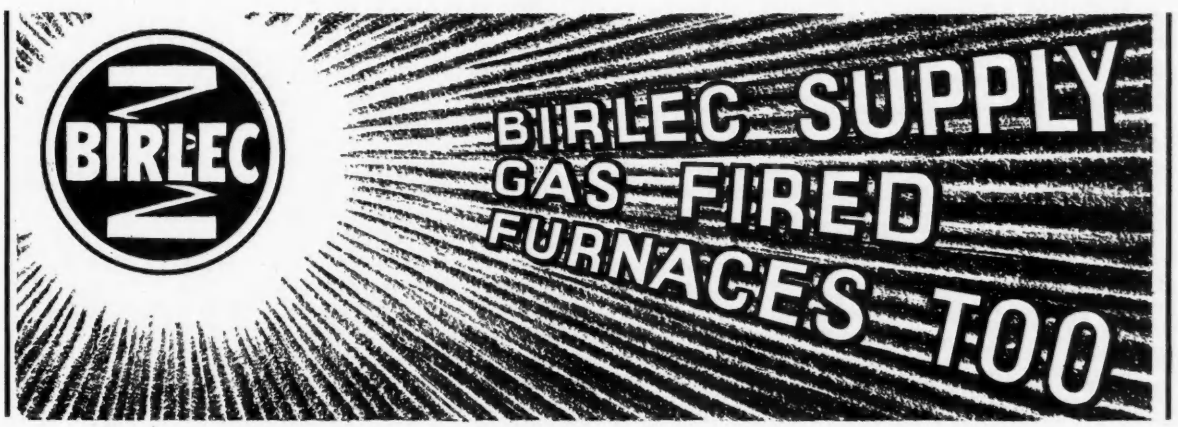
Discussion on the Institution Symposium—The Gas Industry : 1941 and After 94

Waverley Association of Gas Managers 107
Gas Consolidation, Ltd. 108

Gas Products Prices 111
Gas Stocks and Shares 111

THIS WEEK'S ADVERTISERS

	PAGE
Alder & Mackay, Ltd.	112
Ascot Gas Water Heaters, Ltd.	Cover I
Bale & Church, Ltd.	113
Blakeley, Firth, Sons & Co., Ltd.	113
Birmingham Electric Furnaces, Ltd.	89
Bratt Colbran, Ltd.	79
Clapham, Bros., Ltd.	78
Cohen, George, Sons & Co., Ltd....	113
Cowan, W. & B.	Cover III
Crone & Taylor, Ltd. ...	Cover IV
Cutler, Samuel, & Sons, Ltd. ...	109
Curtis, A. & L., & Co.	113
Dempster, Robert, & Sons, Ltd.	113
Donkin Co., Ltd. (The Bryan)	Cover II
Drakes, Ltd.	81
Ellison Insulations, Ltd.	113
Fluxite, Ltd.	113
Frost, A. E.	114
Gas Meter Co., Ltd.	80
Gas Purification & Chemical Co., Ltd.	113
Glenboig Union Fireclay Co., Ltd.	83
Glover, George, & Co., Ltd. ...	77
Glover, Thos., & Co., Ltd. ...	90
Goodall, Clayton & Co., Ltd.	Cover IV
Green & Boulding, Ltd.	112
Harrisons (London), Ltd.... ...	112
Holmes, W. C., & Co., Ltd. ...	115
Humphreys & Glasgow, Ltd. ...	88
Jenkins, W. J., & Co., Ltd. ...	85
Johnson, C. H., & Sons, Ltd. ...	83
Keith Blackman, Ltd.	116
King, Walter, Ltd.	86
Kings Patent Agency, Ltd. ...	113
Kirkham, Hulett & Chandler, Ltd.	86
Macpherson, Donald, & Co., Ltd.	84
Main, R. & A., Ltd.	104
Manchester Oxide Co., Ltd. ...	87
Menno Compressed Air Greasecup Co., Ltd.	112
Meltham Silica Firebrick Co., Ltd.	84
Mewburn, Ellis & Co.	113
Mitchell, H., & Co.	86
National Enamels, Ltd. ...	Cover II
Newton Chambers & Co., Ltd.	98
New Bowson Coal Co.	86
Parkinson Stove Co., Ltd. ...	101
Parkinson, W., & Co.	90
Pass, E., & Co., Ltd.	82
Pulsometer Engineering Co., Ltd.	Cover IV
Radiation, Ltd.	102, 103
Reavell & Co., Ltd.	82
Siebe, Gorman & Co., Ltd. ...	86
Stanton Ironworks, Ltd.	114
Strachan & Henshaw, Ltd. ...	77
Sutcliffe, Speakman & Co., Ltd.	86
Thomas & Bishop, Ltd.	111
Trotter, Haines & Corbett, Ltd. ...	112
Walker, C. & W., Ltd.	109
West's Gas Improvement Co., Ltd.	110
Withenshaw, A.	113
Woodall-Duckham Co., Ltd. ...	97
Appointments Vacant	114
Company Notice	114
Contracts Open	114
Patents	113
Plant, &c.	113
Plant, &c., For Sale and Wanted	113



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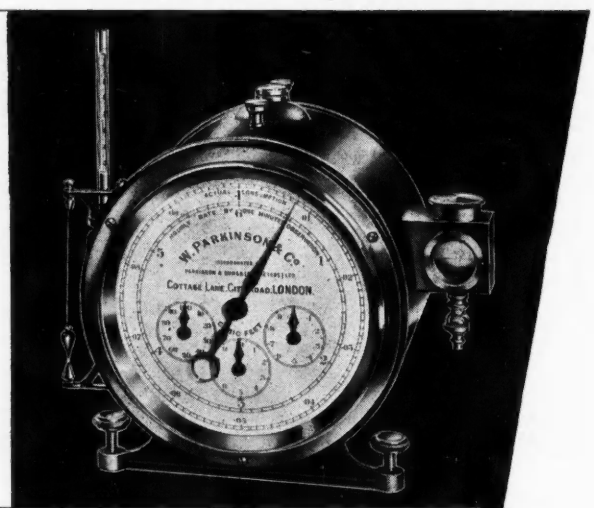

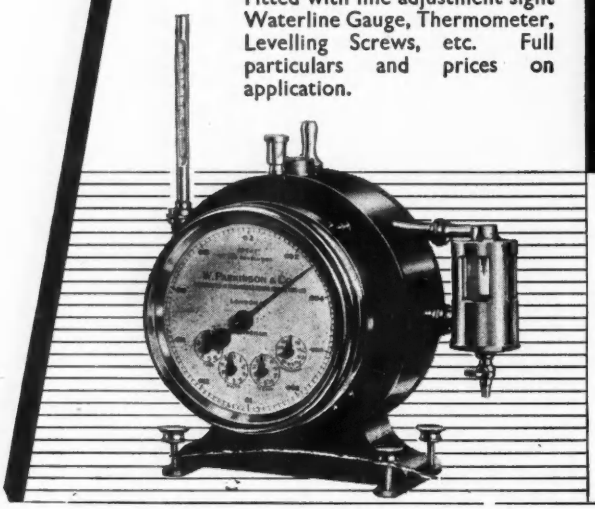

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P. 4

GAS JOURNAL, JULY 16, 1941

VOL. 235 93rd YEAR No. 4078

EDITORIAL NOTES

COAL

DURING the past week the vital question of coal production and consumption has been much discussed. As far as the Gas Industry is concerned, without adequate coal supplies, it is obvious enough that it cannot manufacture the amount of gas needed for the production of munitions or extract benzole and at the same time ensure the maximum extraction of benzole and thereby satisfy the Government's earnest request, which the Industry does desire to satisfy. The letter from Mr. C. S. Shapley in the "JOURNAL" this week is a case in point. For long an ardent advocate of benzole recovery, he finds himself in the position of being unable to operate two perfectly good benzole plants while endeavouring to cope with other demands on his gas-making plant. And it is common knowledge that public utilities generally are short of stocks and that the situation next winter cannot be contemplated with any satisfaction unless something can be done about it, and that something without delay. We quote from *The Times* of last Wednesday : "The need is exceedingly urgent. Unless huge stocks are built up this summer the outlook for the winter will be serious. Public utility undertakings and other large coal consumers have very small stocks. Reserves everywhere are low and the time for replenishing them is now. The Government have reasons for not publishing the figures of output, which have been suppressed, like all figures of employment, during the war. Under the cover of this secrecy the output of the mines has fallen to a dangerously low level. The Government might well consider whether knowledge of facts of this kind would not be a public safeguard against sliding into dangers ar present concealed. After all, the people want, and indeed demand, complete concentration on the winning of the war. To face unpleasant facts, they must know them. What is unknown will not be overcome by the power of the public will." There is much wisdom in this.

From July 1 the allowance of coal for non-industrial premises was made one ton for a calendar month, and this, it would seem, will be delivered only if the consumer on the first day of the month in an " importing " area has less than two tons of house coal and one ton of coke or similar fuel in stock, and in a "self-supporting" area less than two tons in all. These restrictions have been introduced so that the war industries shall not be hampered through lack of fuel, and Mr. Bevin last week put in a plea for another 20,000 miners. The Gas Industry has co-operated with the Government in the past by explaining through many channels to the gas consuming public how to make the best use of their gas supply in wartime, how, in other words, to effect economies which can be passed on to other consumers more concerned with the use of gaseous fuel in the prosecution of the war. It is the opinion of many, however, that the Government would do well to reconsider the scheme for rationing household coal. The scheme attempted in 1939 had to be hastily dropped, and its withdrawal (it was not a question of abandonment) certainly averted much hardship in the severe winter of 1939–40. Again, the household consumption of coal is only a small part of the total coal output, and it has been computed that the gain obtainable by cruelly hard rationing could hardly exceed 6 or 7%. Coal is a vital factor in our war effort, and yet it is disturbingly scarce. Consumers for more than one reason will do their part by practising the utmost economy with coal and with everything which depends on it. More important than anything else is that public utilities' stocks should be built up before the next winter sets in.

A WOMAN'S VIEW OF STANDARDIZATION

COMMENTING on the Institution Paper by Mr. R. J. Rogers last week, we once again expressed the view that, while some measure of standardization of domestic gas appliances is long overdue, the whole policy of standardization should be to avoid at all costs a marking-down of performance and efficiency to a set standard. Standardization of parts, in other words, must not mean standardization of thought or any degree of stagnation or limitation of ideas; it must not result in rigid and maybe lop-sided programmes for the development of new appliances and new loads; it must help, not hinder; it must be characterized by flexibility. Within this framework who can deny that standardization is capable of doing a power of good to the advantage of all concerned in the post-war era?

Much of the discussion on the Paper at the Institution meeting centred on the domestic cooker, and we have already referred to the remarks of Mr. Cyril Davis in this connexion. We have not mentioned the observations of Miss Ethel Willans, of the Gas Light and Coke Company, but they were very welcome as representing the woman's point of view on cooker standardization—opinions, by the way, of one of great and pioneering experience in the field of Home Service. We very much like her description of standardization as a two-edged sword which must be handled with care. "Carried too far," she said, "competition would be annihilated and the initiative of manufacturers would be stifled." Yet she expressed the view that the housewife, more than ever after the war, would welcome standardization of the essential parts of a gas cooker. Why, queried Miss Willans, should not cookers be classified in sizes to suit the number of people for whom they are intended to cater? The logical outcome, she argued, would be that cake trays and oven tins would fall into the same class as the cooker. Again, the number of hotplate burners might well be standardized according to the classification of the cooker. Another point she made was that all housewives are agreed that the simmering burner must be at the back of the cooker, although "most manufacturers would like to persuade themselves that this is not the case, since to put the small burner in front eliminates certain combustion difficulties." A further point was that standardization of the thermostat calibration in terms of temperature rather than arbitrary numbering or lettering would prove "as great a boon to the housewife as to the gas undertaking and the manufacturer."

It is difficult, indeed, to find any argument against such standard calibration in terms of temperature, or the fact that it would prove a boon and an all-round blessing. The cooker thermostat, too, though a brainwave of magnitude according to Gas Industry standards, is a simple affair (the relative expansion of two metals). Yet we know full well that standardization of calibration would demand from the manufacturers a very real manifestation of that collaboration with the rest of the Industry which we are often assured is their great desire. We realize from their advertising and in other ways what importance they attach to their own pet markings, to claims of originality, and to other points which are useful to them in a world where normally competition is keen and commercial success is not won without effort. We do appreciate, therefore, that in this respect standardization would call for sacrifice, and could not be so easily achieved as might appear at first sight. On the other hand, we cannot think there would be any loss of efficiency if the manufacturers of these simple devices could get together to formulate an agreed code. After all, top flue,

bottom flue, zones of cooking in the oven—it is fundamentally a question of temperature. If one maker desires a certain zone for the consummate cooking of "English" carrots, well-prepared spinach, and a soupçon of meat, let him put his thermostat in a different position in the oven to achieve precisely the same result as any rival manufacturer can. There have been many trade names of thermostat in the cause of Gas Industry "service."

Regarded from the Gas Industry's point of view objectively, what is this blessing bestowed by the thermostat? That it has proved in many a thousand instances a blessing in disguise and a paramount factor in married bliss we will not deny. Even the chivalrous must enquire, however, about post-war demands on the housewife. Should she start at one end or the other of the thermostat? A reasonable meal is not prepared by thermostat alone. The much despised 1922 "National" standard gas cooker was faulty in appearance as judged by Hollywood standards of to-day. But we doubt whether it had that awkward tendency to "gum-up." Perhaps more enamel would have facilitated its acceptance; our own opinion is that its non-acceptance went deeper than that. In wartime we are now enjoying excellent cooking on a "National" standard model which throughout many Metropolis blitzes has—granted available gas supply—given no trouble in spite of changes in calorific value of gas, combustion characteristics, and the like.

This is not an argument for standardization of cooking or cooker; but it is hard to understand why one simple model of gas cooker, alien from the patents of any particular firm in the Industry, should not be produced in co-operation between the manufacturers. Their enterprise we have long admired, and we are sure they are amicable among themselves. Collaboration granted among the manufacturers on simple apparatus devoid of innumerable, quasi-scientific devices, we fell sure that the appliances produced, whether they be gas cookers, water heaters, or "fires," will be acceptable to many at a reasonable price. And this will not stultify enterprise; rather will it make play with woman's imagination.

Fraternity in Wartime

The gas and the electricity industries entered into an "understanding" some long time ago. We were travelling in a 27 'bus from Kew Bridge to Notting Hill Gate very recently and were amused, if not surprised, to see on several panels, "Electricity produces no fumes," or words to convey the cleanliness of that form of energy. Beside it were items such as "Do not spit; penalty £5," and "'Bisto' is good for Kids." Gas, of course, was virginally modest—no claims, but perhaps a future. Who knows? Gas does not advertise; its merits must be demure. But not so solid fuel. Take the *Woman's Journal* with its alluring and its practical advertisements. One of the advertisements in the current issue was concerned with cooking equipment, and it was pleased to announce that where other sources of energy might fail through enemy action, dependence could at least be found in solid fuel, through a particular appliance.

We are not surprised that many gas men find it difficult to understand exactly what the "understanding" means.

Awards for Gallantry

The King has given orders for the following appointments and awards:

M.B.E. (Civil)

D. W. Rees, Engineer and Manager, Pembroke District Gas Company.

George Medal

W. J. Holtham, Chief Valveman, Gas Light and Coke Company.
J. Burns, B.Sc., Ph.D., Engineer, and
A. S. Heap, Head of Works A.R.P. Services, Gas Light and Coke Company.

British Empire Medal

F. Anderson, Assistant Valveman.
W. J. Dixey, Retort Pipe Fitter.
A. F. Smith, Retort Pipe Fitter.
E. N. Smith, Works Police Constable.
E. W. Wenborn, Holder Attendant.
G. J. B. Cox, Assistant Engineer.
C. Wyatt, Scrubber Yard Attendant.
F. Forrest, Chief Valveman.
F. Wilson, Works Fireman.
All Gas Light and Coke Company.
F. J. E. Laurie, Gas Fitter, Leytonstone.
A. Marshall, Yard Foreman.
G. Windsor, Pressureman, and F. McNally, Assistant Pressureman, Liverpool Gas Company.

Personal

Owing to ill-health, Mr. HEDLEY HOY, Gas Engineer and Manager to the Borough of Workington for the past 22 years, is retiring on Oct. 31.

Obituary

The death of Mr. E. BIRCH, Distribution Superintendent of the Stockton Corporation Gas Department, is recorded with regret. Both Staff and Employees feel the Department has sustained a heavy loss in his passing. After receiving training in both the Works and Distribution Departments, Mr. Birch devoted his full time to the latter, and carried out his duties with thoroughness and enthusiasm. During the War his close attention to Air Raid Precautions in relation to his Department was in evidence, and his keen support of the Northern Area Gas Salesmen was reflected in their choice of Mr. Birch as Chairman Elect in September next.

1941 "Journal" Directory

In order that subscribers may keep their Directories up to date, we summarize below the changes of which we have been advised since this feature last appeared on page 225, May 7 :

Page 2. ABERYSTWYTH. A. H. Sayers, E. & M., *vice* J. Gaunt, retired.
„ 78. WOMBWELL. F. T. Hatswell, temporary E., M. & S., *vice* E. J. Wellens, deceased.
„ 84. DUMBARTON. E. Smith, E., M. & S., *vice* J. Bell, retired.
„ 92. NEWPORT (Fife). J. L. Thomson, E. & M., *vice* D. L. Dickson, appointed E. & M., Airdrie.
„ 98. LIMERICK. F. G. Thomas, appointed E.
„ 123. COLONIAL GAS ASSOCIATION. Sir A. Robinson, Chairman, and C. F. Broadhead, Managing Director, *vice* P. C. Holmes Hunt, deceased.

Letters to the Editor

On Benzole Recovery

SIR,—I note the remarks of Dr. M. Barash in your issue of June 25, particularly where he says he does not know why the Gas Industry is not so far advanced in the matter of benzole extraction.

I would point out, however, that I wrote to Dr. Barash on April 30 and I think my remarks are worth while reprinting. The home-produced spirit does not use shipping tonnage nor does it entail risking the lives of our gallant seamen, and moreover, money does not go out of the country to pay for benzole.

The coal position is not good, although the Mines Department on April 4 promised the Conjoint Conference of Public Utility Undertakings that they had a stocking programme to meet our requirements.

Yours, &c.,
C. S. SHAPLEY,
Engineer and General Manager.

Leeds Gas Department.
June 30, 1941.

Dr. M. Barash,
Technical Officer,
Mines Dept., Advisory Committee on Benzole Recovery,
70, Parsonage Road, Withington, Manchester 20.

DEAR SIR,—I thank you for your letter of April 29, and also beg to confirm your interview with my Chairman, Alderman A. R. Bretherick, and myself at this office yesterday. We listened to you with interest and with full knowledge of the importance of the country's needs for a maximum production of benzole from every available source. The following are the main points of our conversation:

1. That I have always been a champion for the case of benzole washing, and during my year as President of The Institution of Gas Engineers (*vide* Transactions) you will see references where I have stressed the necessity of home-produced benzole.

2. We installed two plants capable of extracting the maximum quantity of benzole from the maximum make of the works for the reason that it was a sound financial proposition to our undertaking to extract it.

3. When war broke out we immediately lost 14% of our output, due to the cessation of street lighting. In response to the appeal made by the Secretary for Mines, we stocked every available ton of coal we could get hold of during the last twelve months.

4. It is unnecessary for me to tell you what our stock position is at the moment, as you know this full well.

5. In order to safeguard the production of gas throughout next winter, I shall require extra coal for stacking purposes, and as we have only 26 weeks in which to stock this, I am apprehensive on account of the shortage of labour.

6. The following Government departments, as well as Major James Milner, M.P., have been informed of our benzole position: Regional Officer, Petroleum Board, Leeds; Geoffrey Lloyd, Esq., Secretary to the Petroleum Board; The Secretary to the Mines Department; The Ministry of Supply, Tol. C., London; The Assistant Divisional Coal Officer, Mines Dept., Harrogate.

The object in constantly bringing the position before the parties mentioned above was to emphasize our desire to improve our revenue, which would have the effect of assisting in keeping down the cost of living due to the fact that we should not be increasing the price of gas.

These observations cover the various points discussed during our interview, and in order that these views may be ventilated again to the Mines Department, I shall be obliged if you will kindly forward a copy of this letter to the Secretary for Mines.

Yours faithfully,
(Signed) C. S. SHAPLEY,
Engineer and General Manager.

Leeds Gas Department.
April 30, 1941.

Conversion of Coal into Gas

SIR,—The Government is calling for economy in coal, gas, and electricity—as if these were not one and the same thing; but their only idea of attaining economy seems to be the imposition of rationing which, with regard to gas at any rate, is, frankly, impossible of equitable enforcement.

Dr. E. W. Smith has told us that the voice of the Gas Industry sounds very low in Government circles. Is it not possible that if the Industry spoke now with one voice and with adequate decision it might carry further this time? And what should the voice say?

It seems pretty clear that the only way to secure a saving in the coal consumed in the form of gas is to reduce the quantity (in therms) available to the public, and this can be done quite simply by making more gas per ton of coal gasified. At the same time we can give effect to at least one of the good resolutions of the June Symposium—we can reduce the number of declared calorific values to three or four.

For instance, we could submit a draft Order to the Government ordaining that gas undertakings should make a drastic cut in the declared value, and that the new value should be one of those recommended by Sir Frederick West. There would be a differentiation between those undertakings which are recovering benzole and the others who ought to be but are not. For instance, in London and the S.E. declared values would be limited to 475 B.Th.U. for benzole recoverers and 500 for the rest; in the English Provinces 425 and 450 respectively; and in Scotland 400 and 425. By the way, the Order should prescribe an upper as well as a lower "tolerance," for reasons upon which we need not enlarge.

On the subject of gas prices, the Industry should make the startling suggestions that there should be no change in the price per thousand cu.ft., and that charging on the therm basis should be temporarily suspended. Those suggestions would certainly make a noise in the corridors of the Mighty! The main argument in their favour—if it got to arguing—is that there is really no time to go into quibbles about profits-and-things during a war like this.

Just roughly, one would think that the proposed reductions in calorific value should save 10% or, say, 1½ million tons of coal, without noticeable inconvenience to the public.

There are, of course, some other considerations which might be brought before the Government, once they have been persuaded to listen to anything at all from the Gas Industry. For instance, if the public could be induced to use gas freely and to save their little stocks of household coal they would be saving transport, men, and petrol, because of the greater economy of sending coal in bulk to the gas-works rather than distributing it in small parcels from door to door. And then, if we have the courage to speak the truth, it should be pointed out that electricity used for cooking and other heating purposes, except in exceptional circumstances, is a gross waste of coal. Is the Clerk, Smithells, & Cobb Report of 1919 quite forgotten? But, of course, there is a truce or something, is there not?

Yours, &c.,
"J.J.C.B.B."

July 9, 1941.

Education in the Post-war Gas Industry

SIR,—I was unable to attend the meeting of the Institution and take part in the discussion on Mr. Terrace's Paper.

The following are two extracts:

"We want to make up our minds what is a suitable course for a young man *entering the Gas Industry* to follow" (the italics are mine).

"We must see to it in future that everything is done . . . to provide . . . the future heads with suitable education and training," &c.

At what point is a young man "entering the Gas Industry"? If this point is the date of taking up his first appointment, then school training, with the advantages of its corporate life, is a thing of the past. There are few schools except the Public Schools giving the type of education desired by Mr. Terrace, and if he means to imply the necessity of attendance at such schools, then, as Mr. Chester points out, we are putting a premium on birth and wealth—"the old school tie." The Institution may be correct in recommending that all aspirants to the higher positions should endeavour to obtain University degrees. Such degrees place the hall-mark of systematic study and the ability to express clearly the results of the knowledge so accumulated. In following this ideal, therefore, gas undertakings should be prepared to do one of two things:

(*a*) Encourage such results by permitting study in the working hours, and subsidizing it financially.

(*b*) Support the engagement of University men after the degree has been taken by increasing the age limit for recruits and offering adequate remuneration for the finished product.

On the other hand there is the Institution education scheme and the examination of the Institution of Civil Engineers to cover technical ability. We must not overlook the difficulties in the small undertaking, where the young assistant finds it hard to get the time for the necessary study. The other qualities necessary for leaders of the Industry and the higher administrative posts are surely not confined to those whose training has been gained at the schools visualized by Mr. Terrace and/or the Universities. It is unnecessary to detail these qualities; some are inherent, some acquired in the hard school of life. They are not acquired by any system of training, and we must not overlook the fact that, valuable though these qualities are, they should be accompanied by a technical and commercial knowledge of the Industry.

I should not like it to be assumed that the views expressed in the Paper are necessarily those of the members of the Institution. How many of the present successful men in the Industry would conform to the specification?

Yours, &c.,
"MEMBER."

London, July 8, 1941.

University of Leeds

The following results are announced of the June Examination of the Department of Coal Gas and Fuel Industries with Metallurgy at Leeds University:

Ph.D.—J. E. Garside, B.Sc., for a thesis on "Substitute Liquid Fuels"; R. V. Riley, B.Sc., for a thesis on "The Scaling of Alloy Steels in Furnace Atmospheres"; E. C. W. Smith, B.Sc.(London), Arthur Duckham Fellow, for a thesis on "The Emission from Flames and Refractory Materials in Contact with Flames."

M.Sc.—O. B. Wilson, B.Sc., for a thesis on "Coke Oven Problems."

B.Sc. with First Class Honours, and Award of LeBlanc Medal.—M. Hamshaw, B.Sc., for a thesis on "The Poisoning of Nickel as a Catalyst in Gaseous Reactions."

B.Sc., Ordinary.—Gas Engineering, W. H. Hollis; Fuel and Metallurgy, S. E. Mayer.

Diploma.—R. P. Rowland (Gas Engineering).

Post Graduate Diploma.—H. G. Allen, B.Sc. (Fuel and Refractory Materials); N. Kujundzic (Fuel and Metallurgy).

Examinations at Subsidiary Standard.—A. Hartley (Engineering), D. Hebden (Engineering), R. Long (Engineering), J. Oates (W. Cartwright Holmes Scholar) (Engineering); F. C. Wood (Corbet Woodall Scholar) (Chemistry).

Mr. O. B. Wilson is the Manager of the Coke Ovens of the Clay Cross Coal and Iron Co., Ltd.

Mr. M. Hamshaw was formerly Technical Assistant at the Brighouse Corporation Gas Department, and has been appointed to the Staff of the Liverpool Gas Company.

Mr. H. G. Allen is the son of Mr. H. V. Allen, Managing Director of Messrs. Allen & Son (Halifax), Ltd., Firebrick Manufacturers.

Mr. D. Hebden is the son of Mr. G. A. Hebden, Managing Director of the South Yorkshire Chemical Works, Ltd., Parkgate, Rotherham.

Mr. R. Long was a pupil of Mr. H. Burton, Engineer and Manager of Shipley Urban District Gas Undertaking.

Mr. J. Oates was a pupil of Mr. F. Greenhalgh, Engineer and Manager of the Oldham Corporation Gas Department.

Parkinson & Cowan, Ltd.

Presiding at the 41st Annual General Meeting of Parkinson & Cowan, Ltd., in London on June 30, Lieut.-Col. H. W. Woodall, C.I.E., M.Inst.C.E., said the net profit for the year ended Dec. 31, 1940, amounted to £55,843, against £25,708 for the previous year, and the undivided profits left in subsidiaries were up by £15,863. This improvement had been effected after adequate provision for depreciation of buildings, plant, &c., and for insurance premiums under the War Damage Act of 1941. The Directors had deemed it prudent to charge against profits not only the legal liability for income tax, but also for 1941/42 taxation liability based on 1940 profits. This latter item alone amounted to £18,200, and but for this the undivided profits for the year would have been higher by £34,063. The parent Company's profit and loss account included a capital profit of £45,824 realized on the sale of an investment in an Australian undertaking with which it had been associated in the past, and in which it still retained a shareholding. Since the war began the Directors had voluntarily borne all income tax on their fees in excess of 5s. 6d. in the pound.

The trading results of the subsidiaries had been generally satisfactory, but the need for working capital to finance new production, added to the weight of taxation and provision for War Damage Insurance had, in combination, largely prevented their profits being passed on to the parent Company. The Directors were doing everything in their power to assist the Government in prosecuting the war effort, and were at the same time devoting the fullest attention to the maintenance of factories, plant, and equipment at the maximum degree of efficiency so that the Company would be in a position to take its place in the legitimate trade and reconstruction when peace eventually matured. The future was not being overlooked and the technical and laboratory staff were actively engaged in the development of post-war products.

An ordinary dividend of 3%, less tax, was declared, payable on July 7, absorbing £11,160. Reserve Account is to be increased from £90,000 to £115,000 by the transfer of £25,000, and £32,314 is carried forward to the next account against £33,379 brought in.

Communal Feeding Centre.—In the "JOURNAL" of April 23 we described the gas equipment in Middlesbrough's first communal kitchens. A second feeding centre is now in operation, of the six which are proposed. The equipment comprises two double oven solid fuel cooking ranges and three 15½ gallon boilers, and "Duoflam" conversion burners are used in a similar manner to those previously described.

DISCUSSION ON THE INSTITUTION SYMPOSIUM—THE GAS INDUSTRY: 1941 AND AFTER

We continue our report of the discussion on the nine short Papers submitted at the 78th Annual Meeting of The Institution of Gas Engineers held on June 11. The Papers were published in full in our issue of June 18, which contained an account of the proceedings at the Meeting. Further written contributions have now come to hand.

(Continued from p. 64 of last week's issue.)

General Discussion

Mr. **F. G. Shaw** (Buxton) wrote: A close reading and consideration of the symposium leads me to suggest that it appears to be generally agreed that something should be done, but no plan for action has yet been indicated.

It appears to me that the Gas Industry should act to obtain co-ordinated Government support similar to that accorded to the electrical industry. I suggest that without such organization the Gas Industry is like an Army and Navy without adequate air support. Again, our processes of deliberation, decision and action on a national scale are so confused and obstructed by local and other considerations that the Gas Industry moves far too slowly and timidly to meet the vital necessities of present conditions and to plan for the future.

I suggest the formation of a General Staff consisting mainly of the paid chief officials of our various central organizations, who should be specially remunerated for their services and have full voting powers. I think it would be to the advantage of the Gas Industry if all the members of the proposed General Staff were paid for their services. The number of persons on such General Staff should not exceed 12 and each member should have an alternative member to replace him, so that the full number is present at each meeting. This General Staff should have the widest powers of decision and full action on all matters concerning the Gas Industry for the duration of the war. Any approach to the General Staff should be made only through the appropriate central organizations. The General Staff would appoint committees of co-opted additional members to consider and report on technical and commercial matters referred to them for such purpose by the General Staff.

The General Staff should be directed to prepare a full report covering the national position and indicating appropriate action on the widest and most comprehensive scale, directed to increase the scope and national usefulness of the Gas Industry. In short, a Greater British Gas Industry. This report should receive the detailed consideration of the various central organizations, and should be submitted to the individual General Meetings of these bodies for adoption as a national scheme.

I have set out these suggestions as briefly as possible, for I consider the time has now arrived when action must take the place of words.

Mr. **R. J. Restall** (Stalybridge) wrote: While The Institution of Gas Engineers as a body is not responsible for the statements made in the Papers comprising this Symposium, it has some responsibility in choosing the Authors, and it may be stated, without fear of contradiction, that the Authors chosen are recognized as capable of giving authoritative views; the Institution is to be congratulated on providing a most provocative survey. On the other hand, the Authors are not fully representative of the Gas Industry and therefore considerable divergence of views may be expressed. There is uppermost in each Paper, however, the sincere desire to rouse the Gas Industry to the needs of the moment and the problems of the future.

By dealing with some of the Papers in relation to each other the important technical aspect brought out by Sir Frederick West that the choice of a calorific value is influenced by the properties of coal available is supported by Mr. Boon's contention that the success obtainable from producing a suitable coke quality is frustrated by the coal producer's unwillingness to send the coal required. The need for the right quality of coal is further supported by Dr. Foxwell, who suggests drastic revision of the attitude of the coal industry.

The Papers, as a whole, give indications that a brighter and more alive Gas Industry is needed, and as a nucleus from which to emphasize a few points the section by Dr. Foxwell, dealing with the internal co-ordination of the Industry, is suggested as being the most striking in the whole series. It may be expecting too much that the whole of the constituent members who go to form the Gas Industry could have their minds fully co-ordinated, and Dr. Foxwell, on this aspect, skilfully points out that unless such a state exists the Gas Industry will not be fit to take its place alongside allied industries in forming a National Fuel Policy.

The Symposium, taken generally, forces on the mind one outstanding failure, namely, the lack of complete agreement between Undertakings. Without any drastic alteration in the Industry's constitution certain Authors show definitely that by co-ordination of effort a pronounced improvement could be obtained. In the Paper by Col. Carr on the future grouping of Gas Undertakings grouping is placed before co-ordination, and the strength of the case for grouping is built up on the manufacture in large and economic units, technical service, and specialized sales. It may be suggested that large units do not always produce the cheapest therm, and a study of the Analysis of Accounts of both large and small Companies and Municipal Undertakings shows that cheap gas can be produced in what may be termed medium-sized units. This somewhat weakens the Author's case, even allowing that very small works would be better replaced by pipeline supplies. With sales, there should without doubt be a National Sales Policy, and such could be obtained without drastic alteration to the present consitution of the Gas Industry—material assistance would be automatically obtained by some form of appliance standardization.

It is suggested that the Gas Industry requires rejuvenating, not amalgamating. A point over which there must be a lot of controversy is the technical services which are given by the Undertakings in the Gas Industry generally, compared with those given by grouped or large concerns. There are many instances where relatively small Undertakings have taken the lead in technical advance, particularly in regard to gas-works practice; and the opinion has been formed that these Undertakings can hold their own technically with both the grouped and large concerns.

The Symposium must take our minds to the immediate problem, "How can the Gas Industry best take its part in a National Fuel Policy?" From a study of this subject conclusion has been reached on the following points:

(1) Part 2 of the Coal Mines Act, 1930, must be modified, otherwise the Gas Industry is unable to give of its best.
(2) The Gas Industry, in its many and individual units, must find a more compact and common policy.
(3) Immediate voluntary co-operation with the electrical industry.
(4) Until a fuel policy is formed and the industries concerned know of their respective places therein, no rebuilding scheme in this Country can be undertaken.

It is suggested that the Government expects certain utility industries to become aware that changes and movement tending towards national development are imminent, and that in itself should be a guide to the Gas Industry's internal arrangements—it would be weakness to plunge in any direction likely to upset the balance which exists to-day in order to try some pretentious scheme whose case cannot be fully justified. The proposals which it is hoped the Gas Industry will put forward must embrace the highest national ideals, must be radically unselfish, and must offer a basis upon which can be formed the Industry's rightful place in the huge co-operative effort likely to result from a Fuel Plan.

Mr. **C. R. Ingham** (Cannock) wrote: Taking the Papers as a whole, it may be said that they indicate the shape of things to come. A unified industry, acting and planning as an industry and not as a number of separate Gas Undertakings, with or without Govermnent assistance or control; an industry improving and standardizing its products, preparing to give better service than ever, putting its house in order to face new problems.

This view of the Gas Industry is a view of it as it may become and not as it is at present. Great changes will have to be made, and made quickly. One of the first changes which will be required is change in the control of the Industry. At present, each Undertaking is run on lines which are parochial. Voluntary co-operation will not give the unification required, and some central body must be constituted with authority to order changes to be brought about. The decision as to the form of this change and how it should be brought about is not a job for The Institution of Gas Engineers, but rather for the National Gas Council. I suggest that district meetings of the National Gas Council should be called forthwith, to make recommendations to the national body. The matter is urgent, and we cannot assume that we shall "muddle through."

Mr. **W. M. Paterson** (Brighton) wrote: The Gas Industry cannot claim to be an industry with a national policy until, broadly speaking, every gas consumer receives the same convenience at the same cost, irrespective of class or locality. This is the ultimate mark at which to aim. The Gas Industry is very far from being national in policy if it is still considered necessary or advisable to discuss a number of Papers dealing with developments in the way of standardization which ought already to have become settled policy from within the Industry. Before discussing such matters we require, as Col. Carr points out, "co-ordination, independent of all sectional or personal interests." There is the crux of the matter. The Gas Industry is composed of a collection of individual Undertakings in agreement on certain broad lines, but in application of policy on a national basis, agreement has proved to be impossible of achievement because of "sectional and personal interests."

There would appear to be two alternatives:

(*a*) The voluntary sinking of sectional and personal interest in a determination to construct from within a really united Industry, with central control of a wide and far-reaching character.

(*b*) The formation of a National Industry by compulsion from without.

The impression created by the Symposium is that although the Authors are anxious to see reform take place from within the Industry (and there can be no doubt about the value of the suggestions), they themselves are not optimistic of tangible results.

On the heels of the presentation of the Papers comes the announcement that the Government is considering the formation of a Ministry of Fuel, by which Department the Gas Industry would be controlled. The extent of this control will be determined by the attitude adopted by the Gas Industry. Is a united Gas Industry going to speak with one voice, and thereby command the attention of the Government, or is there going to be a fight for "sectional and personal interests" that will be met by compulsion? No lasting success will be achieved by compulsion. Our " New Order " can be built up only on unselfishness and good will, of which the Gas Industry has a large share, as is proved by its record of service in the interests of consumers, employees and shareholders (or ratepayers) alike. Let us give an example to the nation by getting down to this problem now. When complete union, fusion, co-ordination—whatever you will—has been accomplished, it will be time enough to discuss problems of manufacture, distribution, residuals, etc.

But perhaps the Industry would prefer to await re-modelling by a Minister of Fuel, say, on the lines of His Majesty's Post Office.

Mr. **C. Pearson** (Gas Light and Coke Company) wrote: I venture to suggest that the points mentioned in connexion with fixed injectors by Sir Frederick West on p. 7, and on p. 25 by Mr. R. J. Rogers, have raised a somewhat more complex problem than at first appears. Hitherto my views, largely based on experience, have been that:

(*a*) Orifice diameters are already standardized to the limit that suitable drills are standardized.

(*b*) This limit of standardization is the minimum permissible standardization in that this variety (No. 0 to No. 80) allows of the very necessary choice of something like 80 different volume discharge rates.

(*c*) Whatever the variation in factors affecting the discharge, including calorific value, we have but to choose one of these drill diameters (or numbers), which is relatively simple to calculate.

(*d*) Standardization of external shape and dimensions of fixed injectors is very necessary.

Assuming, for example, that types and designs of injectors were limited to three (A, B, and C), obtaining a No. B34 injector would be a simple matter (type B—Morse drill No. 34).

The position to-day is such that a No. 34 injector on a certain appliance is limited to that appliance by virtue of its external dimensions only. Whilst rationalization of calorific values would clearly have far-reaching effects, I believe that so far as fixed injectors are concerned it would help but little; whilst it may be true that calorific value is probably the largest factor concerned, several other factors also have so much influence that it is doubtful if rationalization to, say, four calorific values would mean only four "series" of fixed injectors. The limitation of types and external dimensions of injectors, however, would appear to be the most likely way to develop standardization in this respect, and I imagine that this course would most probably result in a smaller number of "series" of injectors than would be obtainable by rationalization of calorific values.

Finally, I might mention that Gas Undertakings can do much to help themselves in this matter by the acquisition of suitable drilling sets, and it is therefore important that "blanks" or undrilled injectors should be included in any such standardization.

Paper by Sir Frederick West

Mr. **G. M. Gill** (Cheltenham) wrote: I have no criticism of the Author's views, and after reading this Paper I am even more anxious than I was before to see a standard calorific value fixed for the whole country, although I am not quite sure about a suitable standard in the case of Scotland. So far as England and Wales are concerned, it is my opinion that 475 B.Th.U. would suit a large proportion of the Gas Undertakings. It should suit those with continuous and intermittent vertical retorts and also those with horizontal retorts extracting benzole, provided that some method of dilution were also employed about which there is no practical difficulty. Some time ago I expressed the view that 500 B.Th.U. would possibly be the best figure, but since then I have changed my opinion, chiefly because of the large amount of benzole plant which has been installed, and which should be available in the future to dilute gas made by straight carbonization without admixture with water gas. For any further dilution, this could be carried out by introducing producer gas into the coal gas stream.

I am sure that the Group of Companies with which I am concerned would welcome the standardization of calorific value as being the right step to take for the good of the Gas Industry. It must not be overlooked that the specific gravity of the gas is of material importance in this matter, and it should not be disregarded when fixing the standard, as it would probably be advisable to fix a range of gravity within which the gas should be supplied.

At the present time the specific gravity of gas supplied to various towns varies very greatly, and in our own Group I have seen figures which range from 0.35 to 0.70, or just twice the density of the former. We find that the gas supplied in the small towns has a gravity of from 0.55 to 0.65, while in the large Works, with better plant and better control, the gravity varies for the most part from 0.45 to 0.55.

Coke oven gas, on the other hand, is likely to vary from 0.35 to 0.45. There is therefore a wide range of gravities of gas as supplied to-day, so that I think it might be advisable in the first place to concentrate on the calorific value and get this standardized and then proceed to tackle the question of specific gravity.

Mr. **C. R. Ingham** (Cannock) wrote : Sir Frederick West suggests that the number of declared calorific values might be reduced to four, ranging from 400 to 500. I think this would be a step in the right direction, but only a step. Standardization of calorific value is only a partial realization of an ideal, namely, standardization of gas quality and characteristics. The Author claims the advantages of standardization to be:

(1) The reduction of the mystery surrounding the formula on which the gas bill is based.

(2) The simplification of gas burners and reduction in the number of parts, thus allowing of some degree of standardization.

I submit that the first advantage would not be realized if gas were supplied in four values, and that we suffer no very serious disadvantage in this respect in any case. The second advantage is the all-important one, and its realization will only be achieved to a small extent by standardizing on four calorific values.

One must admit that there is a most powerful case against standardization on one calorific value and quality. Types of coal, markets for coke and types of carbonizing plant vary, and it will probably be agreed that at least two qualities of gas, "high" and "low," are inevitable, but is there any need at all for any more than two qualities, such as, for example, 500 and 425? A Works making 475 gas could step up 25 or down by 50. If 450 gas were made, this could be reduced by 25 and a 400 gas raised by 25. The cost of making gas of one of these two standard qualities would be very little higher than that of making the present quality, but think of the advantage! By standardizing the combustion characteristics of each of the two calorific values we should have only two grades of town gas. Gas would become inter-changeable from one Works to another. A gas grid would become a practical proposition on a regional basis, as it would probably be found that high quality gas would be standardized in well-defined areas and low quality gas in other areas. Standardization of burners would be effected and cost reduced and service improved.

Improved service is the key to the whole problem. It is this service which will decide what is to be the future of the Gas Industry, and, indeed, if it is to have a future at all. For too long the Gas Industry has been controlled by men with the "manufacture complex," who are so concerned with saving a farthing a therm in the cost of manufacture that they miss the savings of pence per therm made by giving the best service. Partial standardization is hardly worth while. Real standardization is worth while many times over.

Mr. **A. Forshaw** (London) wrote: It would appear from Sir Frederick West's Paper that one ultimate calorific value is out of the question, and I for one would not venture to say that the reasons he advances are not cogent ones. This is a pity because his proposed compromise of four calorific values, with marginal tolerances, for the whole country, while no doubt much more practical for the gas makers, would not be of such great help to the gas appliance makers as might have been supposed. At the present time, for instance, an appliance provided with a governor and with an injector nipple of fixed size can be made to work satisfactorily within the calorific value range of 400 to 560 by means of four alternative injectors differing only in the size of the drilled hole; in other words, by dividing the range into four classes. Little or no advantage can, therefore, be looked for if four classes of gas and therefore of injector are still to remain.

This brings me to an aspect of standardization which I do not find mentioned in the Paper, namely, specific gravity. Those who have had no practical experience of the influence of this factor on the performance of gas appliances are bound to under-rate it, while I find considerable numbers of Gas Undertakings have never determined the figure for their own gas and often have but the foggiest notion of what it may be. The point I wish to emphasize here is that a borderline case, *i.e.* a calorific value near the upper or lower limit of its class, may easily be pushed out of it into the class above or below by the influence of specific gravity, and that, therefore, calorific value alone affords an insufficient basis on which to predict the correct drilling of an injector. This factor should be given much more consideration in schemes of standardization than it has as yet received.

To sum up, I would say that the appliance maker would welcome any move towards standardized calorific values, yet the fewer the standards adopted the more is standardization of appliances facilitated. Such standardization should be accompanied by attention to specific gravity, and if possible to other factors comprised under the heading "combustion characteristics."

Mr. **L. T. Minchin** (Gas Light and Coke Company) wrote : Sir Frederick West's appeal for a standardization of gas quality is bound to be received with gratitude by those of us who are concerned with gas appliance design. The present position of the Gas Industry in this respect is more chaotic than was the electrical industry twenty years ago, although in fairness one should add that conversion of appliances is a much simpler matter with gas. However, it is a deplorable fact that in many cases even now, if one desires to know if a given appliance will operate satisfactorily at a point 200 miles away, the only method open to one is to take it there and try it. This arises from the fact that although the calorific value of gases distri-

buted is well known, this is very rarely the case with their specific gravity and A.T.B. Number. From this it follows that mere classification of gases into calorific value blocks—425, 450, 475, 500, as suggested by the Author—would not be enough to produce the results he desires. A 500 calorific value gas, for instance, may well vary between 0.40 and 0.55 in its specific gravity, and this means that appliances at constant pressure will vary in heat input by an amount corresponding to about 30 B.Th.U. per cu.ft. Even if the average specific gravity—in this case 0.475—were taken as standard, this would still mean a margin on either side of the standard B.Th.U. inputs of 15 B.Th.U. per cu.ft., which evidently would interfere with the whole scheme of standardization.

The rate of heat input of a governed appliance depends upon the calorific value divided by the square root of the specific gravity, a function usually known as the "Wobbe Index," and in my opinion any standardization should be based on this rather than on the calorific value. Even this would not ensure that an aerated burner would be stable on gases falling within the same grade, so that a specified A.T.B. number range is also desirable. The best solution would be to institute one or more specifications for standard grades of gas. Each grade would then have :

(*a*) Wobbe Index limits.
(*b*) A.T.B. Number limits.
(*c*) Maximum limits for impurities, including especially sulphur.

These limits would be so chosen as to enable one appliance adjusted on the mean gas to operate satisfactorily over the whole range. One could then mark, for example, an appliance "suitable for Grade A gas" or "suitable for Grade B gas" and know that it would behave satisfactorily anywhere so long as the gas supply was kept within that grade. The standard appliances which Mr. Rogers hopes to achieve need then only be made in two, or at the most three, forms for the whole country. In this connexion Dr. Foxwell makes a remark about burner designers which has been heartily endorsed by Mr. Webber. He states that modern appliances are over-sensitive to changes in gas quality. This is certainly not true so far as the appliances adopted by the Gas Light and Coke Company are concerned. They have to pass a special test at Watson House on gases of A.T.B. Number corresponding to the two extremes of flame hardness. Only if they neither light-back on the one, nor give bad combustion or soot on the other, are they passed for district use.

Actually the burner which is most sensitive to gas quality is the oldest one in the Industry—the lighting burner!

Paper by H. Hartley

Mr. **G. M. Gill** (Cheltenham) wrote: I was glad to see this Paper by Dr. Hartley. For years it has been my strong belief that an essential foundation for building up a sure, consistent and continuous demand for any product is the maintenance of its purity and quality at a prescribed and unvarying standard. The sulphur impurity stands in the way of the development of gas consumption in many directions, and it would be a boon to get rid of it, or at least most of it. The cost of its removal, particularly in large Works, is by no means burdensome, and we ought, in my view, to get on with the job.

Its removal can be combined on a practical scale with the extraction of benzole, by which means the cost of the removal of the majority of the sulphur compounds is carried out at a profit. That it saves maintenance costs on the district I have no doubt at all, and no one can estimate what that can mean in increased satisfaction to our customers. I do not believe that it can be described as unduly optimistic to expect a profit from its removal with the benzole, and a further profit from the saving in district maintenance. It can therefore be a commercial success.

One of the Undertakings in the Severn Valley Group is buying coke oven gas in which the sulphur impurity is not more than 5 gr. per 100 cu.ft., to which low quantity the gas has been purified by oil washing for benzole. In this case its removal to this extent has resulted not from any desire to remove the sulphur, but merely from the effort to extract as much benzole as possible.

In my remarks on Col. Carr's Paper I refer to the fact that in England and Wales there are no fewer than 736 Gas-Works making less than 250 mill. cu.ft. per annum, and only 161 making more than this quantity. With so many small Works it is not possible to do what we ought to manufacture gas in the scientific manner that is essential if we are to produce a really good and satisfactory product. At the same time, it is a practical proposition to deal with the large proportion of the gas made in this country, and I look forward to this development.

Mr. **C. R. Ingham** (Cannock) wrote: Dr. Hartley advocates the reduction of sulphur compounds to the limit. That should be the aim of the whole Industry, and the only point of argument is, what is the limit? Is it zero, one grain or ten grains? What is the cost of reducing to the various limits, and is it worth incurring?

I suggest that reducing the sulphur to five or six grains is nothing but a step forward. Gas with this amount of sulphur has all the disadvantages of high sulphur gas, but less in degree. I think that an upper limit of one grain is the only quality we should accept, provided the cost is not too high. If the cost does not exceed .02 pence per therm, we should be prepared to pay it.

There remain two other problems: (*a*) How best to effect this reduction; (*b*) what can works smaller than, say, 100 mill. do.

Further information is required.

Mr. **A. Forshaw** (London) wrote: I would like just to point out that fairly recent publications dealing with flueless heaters have concluded that in inadequately ventilated rooms accumulation of products of combustion would cause conditions to become intolerable from the smell of sulphur oxides and from overheating, before concentrations of nitrogen oxides and carbon monoxide became significant. In so far as this "intolerable" state is due to sulphur oxides, the elimination of sulphur from the gas would, of course, remove such automatic warning of insufficient ventilation and cause more attention to be given, beforehand, to the adequacy of the means of ventilation—perhaps no bad result in itself!

Mr. **J. Dickson** (Dundee) wrote: The Author has quoted costs applicable to the maintenance of gas appliances given by myself at 3d. per 1,000 cu.ft. sold in Dundee in 1927. That figure was really an estimate of the cost of renewing, in a period of 7 years, corroded and inadequate service pipes, which, following a complete survey of the supply area, were found to be serving approximately 20,000 of the then total number of 54,000 consumers. The estimate embraced the cost of a maintenance scheme for domestic and industrial consumers, and also the expenditure which would be entailed in re-servicing those 20,000 consumers up to the meter. For the sake of historical accuracy I have again looked into the actual position, and find that although circumstances necessitated that the work should be spread over a longer period, the great bulk of it was overtaken in the time mentioned. During that time the maintenance figure averaged 0.4d. per 1,000 cu.ft. sold, whilst re-servicing averaged 1.26d. per 1,000 cu.ft. sold; the maximum cost of both, in any one year, was 2.47d. The actual work has therefore been accomplished at a less cost than the estimated figure quoted.

Doubtless sulphur, carbon dioxide, oxygen, and moisture each added its toll to the cost of this extensive work of bringing an adequate supply up to consumers' premises. At the time the scheme was inaugurated vertical and horizontal retorts were in operation, and the sulphur content in the town gas averaged 14 gr. per 100 cu.ft. Now with vertical retorts, carburetted water gas, and, since 1935, recovery of crude benzole approximating 2¼ gall. per ton of coal, the sulphur content rarely exceeds 8 gr. and on occasion is maintained under 6 gr. It is of major importance to note Dr. Hartley's reference to the Corrosion Reports of the Joint Research Committee, which showed that the amount of corrosion decreased as sulphur was removed, and that when the content began to fall below 8 gr. the weight of metal removed by corrosion decreased sharply. His remarks as to the necessity for a low sulphur content, bearing especially in mind the use of flueless heater apparatus, are equally important. There is a wide field of utility for this class of heater, given gas of the grade indicated in respect to sulphur content, linked with good maintenance service.

I agree with the opinion reached by the Author that it would not be unreasonable, if sulphur were eliminated, to anticipate a saving in the cost of maintenance of appliances, and complaints arising therefrom, of 0.1d. per therm sold to domestic consumers. But corrosion ravages in the Industry have still to be dealt with, in view of the Report of the Joint Research Committee as recently as November, 1936, which submitted, as Dr. Hartley has pointed out, that an all-round reduction of the sulphur content to 10 gr. per 100 cu.ft. would represent an immediate advance and was strongly to be recommended. It is my opinion that something better than this will be required of gas engineers, and the Industry must be prepared to install plant towards that end.

Paper by W. L. Boon

Mr. **H. H. Brown** (Exeter) wrote: Although the Author has confined his attention to the subject of size, to the exclusion of the other properties in the matter of standardization, and has started with the premise that standardization of coke sizes is necessary alike to the producer and customer, he has developed his argument not only logically but also with such insistence as to suggest that he is aware that there are still a number of the unconverted to consider his evidence.

It is safe to suggest that the majority of coke producers who screen the whole of their output and market the L.C.C.A. sizes would subscribe, in general, to the declaration, but those with experience in marketing gas cokes from horizontal and continuous vertical retorts and from intermittent vertical chambers will agree that in order to ensure a satisfactory product it is not only necessary to control sizes well within the limits for the denser cokes, but also to control water content. Water control is (within the limits dictated by carbonizing system and quenching plant) at the discretion of the producer and is not substantially dependent on the type of coal carbonized. The tolerance for water for each type of coke should be ascertained and suitable maxima fixed. With this qualification regarding water tolerance, one can agree in general with the statement regarding elasticity of size to meet known differences in coke characteristics, but one may also remark that the operation of grading to size is not static and that screens wear, and there is also a temptation for producers to manipulate screening (in the absence of a coke cutter) over wider limits than is desirable in order to accommodate production to the varying demands for specific nominal sizes.

A highly reactive coke such as is normally produced in continuous vertical retorts is more accommodating in the possible "make-up" of a satisfactory No. 2 size than the less reactive and heavier cokes, if utilization in open coke grates is the criterion. It is therefore justifiable to use well-worn screens on the upper limit and also partially to restrict screening area on the lower limit in order to increase output of this size. The same remark applies to a less extent to Nos. 1 and

la sizes, but does not apply to No. 3 size. Experience in the use of No. 3 coke in small domestic boilers points to the desirability of obtaining uniform screening in order to prevent packing of the fuel bed, and this is as important with fuel of low bulk density as with the heavier and less reactive cokes.

It is noticeable that Mr. Boon makes no mention of a size of coke which is associated with a nuisance value both on the Works and in distribution—namely, dust. It is to be hoped that dust eliminators will one day be a feature of all coke-production plants. Development of this idea must obviously be restricted on account of war conditions.

The marketing of increased amounts of standard sized cokes in a conservative quarter of England and without very enthusiastic co-operation from distributors, or, one may fairly say, without any assistance from some of them, has not proved a particularly difficult task, as is illustrated by the following table:

Year ended June 30.	Sized Coke Sold, tons.	
	No. 2.	No. 3.
1939	3,630	600
1940	4,740	720
1941*	5,670	2,100

* Amounts for month of June estimated.

In conclusion I should like to congratulate Mr. Boon on the virile tone of his Paper and to suggest that a campaign should be inaugurated to educate the public to order gas coke by numbers. At the same time all references to the last remaining vegetable, in the shape of "nuts," could be dropped.

Mr. **H. J. Hodsman** (Leeds University) wrote: Mr. Boon's advocacy of standardization of coke sizes will receive general support, but the enforcement of standard specifications for all the properties is open to question. It might imply the limitation to those cokes which are the by-products of carbonization, excluding special fuels manufactured by existing or possible future processes. The question of specification and testing has been discussed elsewhere.* These Papers dealt with the limitations of chemical and other tests which involve the use of samples in the form of small particles, with consequent break-down of the structure of the coke itself, which greatly influences its behaviour in use. This shows the value of burning trials, giving what Mr. Boon describes as an "assessment based on factors of practical operation." The properties of some manufactured fuels are best shown by a burning test, and if judgment is to be based on one test, then that should be made in the grate. Standardization of burning test would necessitate standardization of the test grate, which need not necessarily be of commercial pattern. It should be of simple form, standard materials and shapes, easily reproducible anywhere.

Mr. **R. J. Restall** (Stalybridge) wrote: Conflicting ideas within the Gas Industry of suitability of coal sizes and quality rather leads to the view that we are unable at the moment to accept what might be a limited specification.

The Author draws attention to evolving standards for every class of coke utilization and gives six headings. In some parts of the Country the commercial cooking load is of importance and might well be bracketed with one of the sizes referred to.

Even now we are all experiencing the movement of industry due to one cause or another, and it seems that this movement will be far larger after the war. It would be a strong selling point for any concern to find on inquiry in its new area that at least the same size of coke was available. It seems inevitable, however, that although the same size may be available, the quality, or more technically speaking, the coke properties, may be very different. This, somewhat like the desire for standardizing the calorific value, depends on the type of carbonizing plant. I recognize with the Author that sizing would be a prelude to quality. How quality and conformity of coke properties are to be obtained is a much more difficult problem.

It is a personal view, but it seems that the old excuse that every case must be taken on its merits should be abandoned immediately with regard to coke sizing. In 1935, in Stalybridge, we started making six sizes of coke, large, 3 in. by 2 in., 2 in. by 1 in., 1 in. by $\frac{3}{4}$ in., $\frac{3}{4}$ in. by $\frac{5}{16}$ in. (all square mesh), and breeze. The larger size is directly interconnected with that of the follower, this simplifying the construction of the screen, and it has been found possible to regulate the quantity of the various sizes required by alteration of the cutting machine. This point has been brought out because any individual effort to standardize size to recommendations would involve alteration to existing screening plant, and the simpler the screen the less would be the cost. This is one reason why we may expect slow progress in sizing. A further cause of time lag may be those Undertakings selling only hand-forked coke. In the area of the Lancashire and District Coke Association there are over 70 sizes of coke made and sold. From this information one may assume that there is no lack of screening plant in our area, but, even so, considerable quantities of forked coke are still sold. Graded coke has the advantage of being worth more money, and it handles better. In our own particular case, before the sale of graded coke was pushed in 1934–5, of 4,600 tons sold, 3,000 tons was large coke; for the last complete year, of 5,000 tons sold, only 258 tons was large coke, *i.e.* forked off the heap.

So far as the handling of coke is concerned, the carbonizing plant and works lay-out are the controlling factors, but I think some very good work might be done in investigating the possibilities of evolving an economically run and simply designed screen.

In the production of a readily saleable coke the use of dry cooling cannot be too much emphasized.

In concluding my remarks in particular reference to sizing, I would like to point out that in 1941, owing to the war, we find the majority of coke markets all over the Country are healthy, despite all classes and qualities. How much better off would be the fuel users of the nation, however, by using the correct size of coke for their particular jobs.

There is probably none in our Industry who has worked so hard for coke and with such success as Mr. Boon. He has had the backing of a very influential section, and the members of the London and Counties Coke Association among their various decisions have, to use nearly the Author's own words, adopted certain coke sizes voluntarily. If an examination is made of the types of carbonizing plants within the Southern area, we find that they are as large and as small and as varied as in other areas, and it is put forward that under these circumstances what has been done in the matter of sizing by the southern part of England can also be done by the remainder.

Mr. **R. Summerson** (Luton) wrote: Mr. Boon has uttered a very timely plea for the general standardization of coke sizes. The trend of development in coke technology undoubtedly lies first in the standardization of coke sizes, and secondly in the design of particular appliances for particular purposes, using one or other of the standard grades of coke.

With the existing five sizes from 1 to 4 most of us can have little quarrel. But I am curious to know why Mr. Boon has made no attempt to define "breeze." Perhaps this requires a Committee. But we must define "breeze," and it seems to me that one stage in reaching a definition will be a decision on the question as to whether fines up to $\frac{1}{8}$ in. are to be removed. Then, having defined "breeze"—and perhaps in the process created a material of size up to $\frac{1}{8}$ in.—appliance makers can set about designing suitable appliances for its use. It must be remembered that breeze arrives at the Gas-Works in the form of coal, which is a high priced and precious commodity. To allow breeze to be used in haphazard fashion at low prices as a boiler fuel, or as a raw material for the manufacture of breeze blocks, is a sad commentary both upon our use of fuel and upon our choice of building material. Can we not up-grade breeze and so increase our revenue from that source?

I agree with Mr. Boon that the improvement of coke quality by the choice of coal alone is not at present practical. That need not, however, deter us from endeavouring to develop a yardstick whereby to measure coke quality. It may be that several yardsticks will be required; but it is to be hoped that a highly-skilled laboratory staff will not be necessary to use them. Otherwise they just will not be generally used.

There is another matter which, though not strictly relevant to Mr. Boon's Paper, I wish to raise. In view of some remarks in Dr. Hartley's Paper, in this Symposium, on sulphur reduction in town gas, I make bold to suggest that it is not, perhaps, too early to consider the removal or the fixation of sulphur in coke. This, no doubt, sounds just as fantastic as did the proposals of Dr. Carpenter to the gas engineers of his day. It took 20 years for Dr. Carpenter's proposals to bear fruit. Now there are optimists who expect that in 20 years' time there will be no coke—as there are also pessimists who say that by then there will be no gas. But in the meantime there may be found some research chemist who might be pleased to give the matter a little attention. I visualize whole streets of smokeless houses burning nothing but gas and coke. I sometimes wonder whether the sulphur oxides from countless coke grates and boilers will not make themselves felt, and that is the last thing any of us would desire.

Finally, may I ask, without in any way disparaging the excellent work done by many of the larger Gas Undertakings and by some of the appliance makers, if it is not high time the Gas Industry had a research organization for the investigation of problems of coke manufacture, coke testing and coke utilization? Surely the revenue derived from coke is not so low that we cannot afford a Coke Research Board.

Paper by R. J. Rogers

Mr. **D. Chandler** (South Metropolitan Gas Company) wrote: The Author has dealt so ably with the standardization of appliances that there is little for anyone to add. I most heartily agree with him in the objections he raises to total standardization, and I support his plea for rational standardization. My Company has for some years been interested in practicable cookers embodying luminous burners, and, in a later design, a solid hotplate. As Mr. Rogers points out, such variations would be outside the range of standard models. These standardized types have honourable lineage but they have now bred a large family, not with identical, but with strikingly similar characteristics. Progress will probably not come from this stock, but from a hardier, less inbred strain.

That was, and is, our view and we have accordingly explored the possibilities of the luminous burner. From the work carried out we are satisfied that a most efficient and very light-weight gas oven is a sound and practicable proposition, and we have now had considerable district experience with these luminous burner ovens. The single-burner, solid hotplate, which we reported on in 1940 in the Technical Press, would have been out of order so far as an ordinary specification is concerned, yet we believe it to be a useful advance. We have also

*Wolfenden, D. G., and Hodsman, H. J., *Coke Oven Managers' Year Book*, 1937, p. 154. Lloyd, E. I., Bell, F., and Hodsman, H. J., *Trans. Inst. Gas Eng.*, 1933–34, **83**, 391.

devised a burner for a semi-solid hotplate, using luminous jets on a burner head, the lower parts of which are of plastic materials. We have had promising results, too, from die-cast aluminium alloy burner heads. Standard specifications, based on past designs and possible developments from them, would not cover the use of such burners and such materials, unless the specifications were so widely drawn as to convert the document from a standard specification into a "please yourself" charter.

Mr. **C. H. Chester** (Swindon) wrote: The cheap cooker does not appeal to me as a sound proposition, for I consider that it would act too much as an incentive to housewives "to try something else, being not really good."

Regional price standardization would be helpful. The policy of seeking excessively high prices for an immediate single profit overlooks the fact that the appliance is but a vehicle towards continuous profit, through increased sales and reduced overheads.

Mr. **W. L. S. Spinks** (Birmingham) wrote: As the Author points out the success of any scheme of standardization depends on the reaction to it of three parties: (i) The consumers of gas; (ii) the Gas Undertakings; (iii) the manufacturers of appliances.

What does past experience show us?

(i) In the gas refrigerator the Gas Industry has really offered a standard article to the consumer, and I do not think that sales have been adversely influenced by the fact that a multiplicity of types and finishes has not been available. It would, therefore, appear that the consumer has no rooted objection to a standard article varying only as to size.

(ii) The attitude of Gas Undertakings varies considerably. On the one hand we have the fact that at the outbreak of war every manufacturer of gas main cocks had to keep a whole range of special patterns to suit the whims of his customers, although the main cock is essentially a simple fitting and consumer preference does not enter into the question. On the other hand, we know that a number of Undertakings stock almost exclusively the product of some particular manufacturer only and consumer satisfaction is not necessarily adversely affected by such policy.

(iii) On the part of the manufacturer, a desire to retain individuality is understandable and to a certain extent inevitable, but there are undoubtedly many ways in which agreed standardization could have been achieved in the past without detriment to their sales and with benefit to the Undertakings. I would instance the coin attachment to the slot meter. Here we have an accessory the price of which could undoubtedly be reduced by mass production, yet it is manufactured by six, eight or more makers, each busily protecting any development by patents. Certainly neither the Undertaking nor the consumer benefits by this policy. If the best type on the market were decided upon and fitted to all makes of slot meters, prices could probably be reduced and any future improvements or developments incorporated in the approved pattern. Why not give standardization a trial in this particular case and see if any detrimental results accrue? To take another instance, how thankful the Undertaking would be if all manufacturers would agree to standardize the height of connexion from their cookers to the house supplies. This should not present great difficulties and would save expense that benefits neither party. Many of the divergencies of present-day appliance design have been sought neither by the consumer nor the Gas Undertaking, and I believe that any reasonable suggestions for standardization put forward by the manufacturers which resulted in reduced first cost and in simplified maintenance would be favourably received by the Undertakings and by the gas consumer.

In many Undertakings the "auto" cooker has already been partially standardized in their own areas in that the consumer has only a limited choice of type. Here is an apparatus of which the annual numbers required are large and for the maintenance of which the Undertaking is often responsible. Could not standardization be applied here?

Mr. Rogers rightly stresses the desirability of uniform prices for appliances throughout the Country. The greatest stumbling block to this is the policy adopted by many Undertakings of including in their sale price the cost of fixing and "free" maintenance, but there should be no insuperable difficulty in arriving at the regional agreement which the Author desires.

Mr. Rogers makes a passing reference to the probability of standardization in building. The Gas Industry will be doing the community a great deal of good as well as ensuring its own markets if it institutes a campaign for the abolition of the flueless room and the unventilated kitchen. As a nation we should benefit if the importance of home cookery were more widely recognized and acknowledged, and if this is to be brought about the kitchen in the post-war houses must be given the consideration it deserves.

Mr. **L. W. Andrew** (Gas Light and Coke Company) wrote: It does not seem to me that Mr. Rogers realizes adequately the urgent post-war responsibility of the Gas Industry to the consumer, and it is doubtful if the type of standardization for which he appeals would benefit the consumer to any real extent. His Paper gives me the impression of scratching the surface of the problem; bringing to light evil practices of the past rather than thinking boldly of the present and immediate future. Recent advances in technical design are potentially so important that surely we should be thinking of the possibility of standardizing new types of appliances rather than of details of construction which lead the mind back, wittingly or not, to the old familiar appliances.

I would like to refer particularly to space-heating appliances. Are we really confident that all manufacturers and all Gas Undertakings are now thinking in terms of different types of appliances to serve definite functions, and not just in terms of a gas fire and a radiator? Are we equally confident that the fundamental weaknesses of design of space-heating appliances are deliberately and constantly borne in mind? Are we thinking constantly of changes in design which serve a vital purpose and give a substantial improvement, and are not just window dressing? To mention some of the types of appliances which are not always remembered: A gas fire suitable to replace the coal fire in the living room; a gas fire suitable for bed-sitting room type of use; a heater suitable for modern small halls; a heater suitable for shops and small factories. To mention some of the weaknesses of design of gas fires: Fragility of radiant; need for frequent maintenance if usage is heavy; noise; loss of appearance at low gas rates; uncertainty of rating at full rate and on turn-down; reliance on directional radiant heating alone; high price.

I think it will be agreed that some manufacturers have considered most of these points and research was never more active or more promising than just before the war. There seemed some hope that the old space-heating appliances were about to be replaced by designs revolutionary in technical improvement. Cheap space-heating appliances, fool-proof, consumer-proof and fitter-proof, designed to do a definite job economically whilst retaining appearance and performance without constant maintenance, were emerging as a result of years of research in the laboratories of the appliance manufacturers and the Gas Undertakings. These surely are the appliances which must be considered for standardization—appliances which set a new standard of performance and utility.

It is not for me to suggest methods of co-operation amongst the manufacturers and the Gas Undertakings, but I do hope that this Paper will help us to take full advantage of the technical information available, in an orderly manner. I feel there is a lesson to be learnt from the past. In the 1920's there was some attempt at standardization of space-heating appliances, but the grand strides of research from 1925 to 1938 led to great technical improvements and in the resulting enthusiasm all standardization was thrown overboard. Can we not now adopt the recent equally fundamental advances with intelligent co-operative standardization?

Miss **A. M. S. Wilson** (Women's Gas Council) wrote: While appreciating the value of standardization in the manufacture, use and maintenance of gas appliances, I feel that the standards should be fixed only after consideration of the positions in which the appliances will work. At meetings of the Women's Gas Council and similar societies I have never heard the housewife complain of a gas appliance; she is satisfied that she gets good service from it, possibly after its use has been explained to her by a trained member of the Home Service. What she does criticize, justly, is the working of a gas appliance in a building which was never designed to hold a gas appliance—heating a flueless room, condensation on the walls of the kitchen, a cooker placed so that the cook stands in her own light while working at the hotplate, or so that the light from the window is cut off when the oven door is open. These difficulties crop up again and again.

As Mr. Rogers has pointed out, we shall have in the future mass production of houses to replace those destroyed by enemy action, and that can be our opportunity, for it will be rebuilding from the foundations. Let the gas appliances be standardized to fit into the new houses. I should like to see some test houses and blocks of flats designed, built, fitted with gas appliances and lived in before the standards are finally fixed. Perhaps it would be unnecessary to build specially; information might be collected from buildings already in use.

As a woman, whose outlook is often more conservative than that of a man, I feel that English people will always tend to prefer staying power to change. We have been taught in some degree to expect a short life for such articles as motor cars and radio sets, but, in discussions of post-war reconstruction, women who have lived on some of the new housing estates have been emphatic that good building is the first essential. Good foundations, weather-proof walls, a well-built home with simple, strong fittings are what they ask for. We may come out of this war with a stronger appreciation of long-wearing quality.

Mr. **P. J. Lucas** (British Commercial Gas Association) wrote: The Author has indicated that his Paper would not be complete without his making reference at the same time to the question of standardization of prices. It is because the British Commercial Gas Association has done something regarding this problem that these remarks are offered in support of what Mr. Rogers has said. At the Joint Gas Conference and at the Association's Brighton Conference, both held in 1939, Mr. Rogers emphasized the need for investigation into the standardization of prices as an essential feature in the development and retention of the domestic load. If this contention was accurate then very little has happened since to alter it; in fact the future points to a very real need for taking every possible step to meet the post-war situation, when the question of all commodity prices will assume much greater importance owing to the general economic position, the stringency of which can, to some extent, be understood now in the light of present conditions.

In 1939 Mr. Rogers suggested that the standardization of prices was a matter for District action, because action on a national basis was not likely to produce the best results owing to variation in local circumstances in different parts of the country, particularly as between the North and the South. The whole problem, however, was not a new one even in 1939, because as far back as 1936 the London Group of Gas Undertakings made a standard price offer in their advertising for one appliance. This new development in policy was dictated very largely by the need to secure the maximum results from

expenditure on advertising, but the results showed quite plainly that the scheme could be extended with advantage.

The Midland Group followed the London Group with a common price offer for a selected appliance, and from the activities of these two Groups there developed a more detailed plan for regional marketing in all the Districts. The Eastern District appointed a sub-committee to investigate the problem, and at the outbreak of war was on the point of making recommendations to the whole of the Undertakings in that District for the standardization of prices for a range of water heaters. This recommendation was to be based on information obtained from a selected group of Undertakings which were regarded as representative of the District as a whole. This procedure was not followed exactly by the Manchester District, because in this particular case the sub-committee appointed to examine the problem obtained information by means of a questionnaire sent to all Gas Undertakings in the District, with regard to a range of three gas fires. This plan of obtaining information from every Gas Undertaking may have proved more difficult than the one in the East District, since out of nearly 150 completed questionnaires there were barely two which were similar in regard to the information given. Other Districts had appointed sub-committees for dealing with the problem and there is little doubt that, but for the war, the enthusiasm of member Undertakings in support of the proposals would have produced a satisfactory conclusion, the benefits of which they would now be accruing to such Undertakings.

The outbreak of war, however, brought with it a suspension of the offer of appliances, both on hire and hire-purchase and this, coupled with the lack of opportunity for meetings and the inability of busy executives to find time to collect and submit information, has resulted in a complete suspension of all the Association's District plans for the standardization of prices as a first step in complete schemes for regional marketing. Mr. Rogers has, however, given some indication that the post-war period will undoubtedly bring demands for the speedy solution of such anomalies as existed in the pre-war period, and in preparation for that day it may well be that the whole question of regional marketing schemes, with their standardization of prices, should now be re-opened. In this connexion, it might be helpful also to bear in mind the views first expressed by the Minister of Home Security, when leader of the London County Council, and more recently by the Lord Provost of Glasgow, that the present boundaries between adjoining boroughs must be eliminated in the post-war period so that their respective populations can enjoy similar services and amenities at the same cost.

Mr. **H. P Lupton** (Liverpool) wrote: Most gas administrators will agree that it is better to have a few really attractive selling lines in cookers and fires than a large number of only moderately attractive lines. The display of many types of appliance leads to confusion and indecision on the part of the would-be consumer. There is no doubt that the aim should be to reduce the number of replacement parts to be carried in the stores. Standardization within limits would lead to simplification of the work of the maintenance staff.

One would have expected that Mr. Rogers would have laid more emphasis upon the varying calorific value and combustion characteristics of gas throughout the Country. The variation in the percentage of water gas, either carburetted or uncarburetted, must play an important part in limiting standardization. There are many factors, some quite unexpected, which play a part in the satisfaction or otherwise experienced by a consumer with a gas cooker. One small item may be mentioned. A particular oven with a high reputation was said to be suitable for the baking of a certain number of 2-lb. loaves. On test, satisfaction could not be obtained, as over-browning of some loaves occurred. On investigation it was found that the popular tins of the district were of a shape different from those in use in the area where the oven had been designed.

The fixing of suitable governors and the supply of a standard type of thermostat having a recognized method of calibration will meet with the approval of many gas officials and consumers.

Mr. **J. Wilson** (Ossett) wrote: If standardization is to be used solely as a means of reducing the selling price of the cooker to the exclusion of some of the more specialized points of the various types of appliances, then I should feel that we were definitely pursuing a wrong policy. Suppose that by standardizing cookers we were able to reduce the price by £2 per appliance, and that it be agreed that 10 years can be considered the reasonable life of a modern cooker, then the difference in cost per year of life is 4s., or less than 1d. per week, and we, as an industry, would certainly lose favour with those ladies, and they are in the majority, who insist on the satisfaction of individual taste. I would like to go even further, and make the rather bold statement that it may be possible to utilize a cheap standard cooker with interchangeable parts, one maker with another, for hiring out on simple hire, but for outright sale or hire purchase, personal experience would tend to show that the individuality of the manufacturers shown in their appliances is a definite selling factor.

I have found in my short experience that the price of an appliance is the very smallest factor in its sale. Appearance and ease in cleaning rank first, efficiency and speed in cooking are the second consideration, and as a very poor third, initial cost.

Mr. **B. J. Bell** (Cardiff) wrote: Probably the first reaction on reading this Paper is to ask what effect such standardization would have on consumers, particularly when the full force of competition has to be met. In this respect experience proves that a reasonable limitation of variations in construction and design is advantageous, not only to the consumer, but to the Undertakings selling appliances.

A retrospective survey shows that in the early stages when gas cookers were practically the only appliances handled by Gas Undertakings, there was a distinct limitation of the number of sizes manufactured and that these were of robust construction and simple design. There was very little alteration for many years, and such innovations as were offered were of a minor character. These appliances had a long, useful life; maintenance costs were low, and consumers generally were satisfied. Then came a gradual but eventually complete revolution in every phase of cooker design and finish, the details of which are well known, until a large Undertaking might easily have had over 100 different patterns of gas cookers in its showrooms to offer for consumers' choice, with the result that maintenance costs increased and the stocking of so many varied renewal parts complicated storekeeping. Such was the demand for domestic gas appliances that the situation was not complicated by the changes referred to, particularly as most of the sales were made on hire-purchase terms, and it was not necessary for Undertakings to make the same limitations as would have been imperative had a hire policy been general.

The multiplicity of patterns was not altogether casual. Manufacturers should be given credit for the great work they have done in their laboratories, where they have spared neither time, talent, nor money in investigating the construction and performances of gas appliances. Such variations as have been marketed are due to this work, and the many and varied differences reflect the efforts of the individual manufacturers in this respect. Until recently the Gas Industry could take but little part in this commendable work. To-day there are several Gas Undertakings where laboratories are maintained at such a standard that it is possible for the Industry to speak authoritatively on what it considers desirable.

It must not be forgotten, however, that the crucial test of appliances is their performance on the district, and purely academic work must be substantiated by experience in actual daily use.

The Author has had the unique opportunity of observing every aspect of the question of standardization, and his experience has led him to make suggestions which he knows, from wide experience, to be feasible, and little can be added to what he has said in this connexion. His classification of gas appliance components will be generally accepted as a reasonable basis for the discussion of the principle of standardization.

It may be objected that the provision of governors on every appliance will add to maintenance troubles, but experience proves the contrary. In districts where pressure variations are unavoidable, the only solution is governed pressure, and, as a concomitant to this, the adoption in practice of fixed nipples. Much could be said on the design of cooker taps and injectors, the efficiency of which is in some cases only secured by unnecessarily complicated construction, and it would certainly be a boon if this were simplified. It would appear that the various items will require very careful discussion before definite conclusions are arrived at. There are items, however, which can be included with profit in col. (i) of Table I, such as grill strips, pans and grids. Certainly one of the primary considerations should be the calibration of and method of indication of thermostats, the uniformity of which is long overdue.

With regard to the standardization of prices, there is a danger of over-emphasizing the necessity of including this item, as from general experience it appears that there has been very little difficulty caused by differences in the selling prices charged by various undertakings. It must be admitted that the point is raised occasionally by consumers, but actually it happens but seldom. Some Undertakings consider that a reasonable profit should result from the sale of appliances; others are prepared to subsidize. This matter has already been debated through another source, and one must come to the conclusion that, while desirable, it is not a vital factor.

Mr. Rogers suggests that the problem of standardization should be submitted to a Committee, representative of gas appliance manufacturers and the Gas Industry. There is no doubt that this is the proper procedure, but it might be suggested that the proposals mentioned in the Paper should be considered first in the Districts, preferably by the various Gas Managers' Associations, where, if it is thought desirable, local committees could make preliminary investigations of the subject. There is no reason why local representatives of appliance manufacturers should not be included. By this means the personnel of the Gas Industry interested would be familiar with the proposals from the commencement of the proceedings, and recommendations could be made by these local committees which would be the basis of the deliberations of the Institution's Standardization Committee.

Co-ordination could be secured thereby and this would ensure the final recommendations being accepted and acted upon by every Undertaking, thus avoiding the fate of the standard cooker, which failed to gain support, largely because its mission was not understood, and because it was thought only to be another pattern among a multitude of others. Such a procedure would also tend to eliminate the special requirements of individual Undertakings, because they would fully understand that such innovations were undesirable from every point of view.

Mr. **L. C. Hill** (Bournemouth) wrote: I agree with the Author that every effort should be made at this time to formulate a policy governing the development of gas appliances, in order to meet the heavy demand which will inevitably be the result of post-war conditions. It would appear quite reasonable to visualize an extraordinary demand, domestic gas cookers in particular being required in very large numbers for new housing estates. The public will expect to purchase these appliances at a reasonable price and expect them to last for a reasonable length of time, and in order that satisfactory service can be given at an economic figure some form of standardization must be provided.

It would indeed be a very grave step to allow the homes of our

consumers to be filled with a large number of appliances of different types which would inevitably lead to confusion in the several Service Departments. In my view, the appliance manufacturers should limit the range of their appliances and provide, for instance, a good general line and also a high-grade line of appliance, in order to cater for the consumer who requires a little better or rather less stereotyped kind of appliance. So far as is possible, the oven and hotplate parts should be standardized, including the brass-work, and I would go a step further in saying that it would be a good thing if the manufacturers could even standardize oven sizes. This would save the consumer much inconvenience.

We have to consider what the conditions will be after the war. Maintenance staffs will be largely augmented and there will be a return of a large number of employees from the Forces; great efforts will therefore be needed to refresh their memories and to train them to meet post-war requirements.

Great difficulty has been experienced in the past in providing technical data concerning the many appliances now existing on the district. Much time has been spent in training members of the staff to recognize the peculiarities and the individual difficulties in the many manufacturers' products. This difficulty has been particularly marked in the Undertakings which cover a large area, and both town and rural districts. Provision of a reasonable service has proved expensive and delays and complaints are higher than is desirable. There is also the installation of appliances to be considered. Much could be done to provide standard equipment to which the gas line is to be connected. Accessories such as governors and thermostats could be reasonably well standardized, especially with regard to their position.

I am not in favour of a short life cooker, chiefly because a large number of consumers will be setting up their homes again and will have to meet considerable expense. In order that good gas appliances may be purchased for a reasonable sum, the hire-purchase system will inevitably have to be extended for a period of at least five years, but too long a period is to be avoided. In spite of many arguments to the contrary, gas appliances, particularly cookers, are sold on the recommendation of one consumer to another, and I am sure the Industry would be repaid by following a policy of providing sturdy appliances of good quality.

We should do well, when considering standardization of design, to bear in mind some of the disadvantages of the present-day cooker from the housewife's point of view. We are inclined to dismiss lightly many of the points raised by the housewife, such as the difficulty of keeping the cooker clean. Many of the new types of cookers now being manufactured are admittedly easily cleaned on the exterior, but require a good deal of time and skill to clean internally. Auto-oven ignition might well become a standard part of the oven equipment.

Finally, I consider that it would be unwise to take any step that would cramp development in the manufacture of gas appliances, and sufficient scope must be left for the manufacturers to be progressive. Further, should a measure of standardization be decided upon, we must make quite sure that the majority of the Gas Industry will support the move, and that the opinion of the whole Country is invited to ensure success.

Mr. **R. J. Pepper** (Gas Light and Coke Company) wrote: From the point of view of the selling and service side of the Gas Industry, I consider total standardization to be a necessity in the post-war period if the Industry is to maintain its prosperity. I do not agree that there would be the danger of restricting further incentive in design and research, and one may instance the Postal and Telephone Services and London Transport in support of this opinion. Freedom of choice would be eliminated apart from perhaps colour and size, but my experience with the large majority of consumers is that the smaller the selection the easier the sale.

The fear that manufacturers would lose their individuality is fully realized, because any form of standardization must tend to eliminate individuality of design of appliances. Nevertheless, I feel that the number of different appliances now available is far too large and quite unnecessary. Total standardization would be welcomed by most Undertakings as it would ease sales and service problems, and also facilitate advertising through the medium of the National Press. The servicing of an appliance after its installation is as important as the actual sale if we are to have satisfied consumers. Really efficient service in the past has been impossible owing to the large number of different appliances on the market, and the correspondingly enormous number of spare parts. Total standardization would eventually bring these spare parts down to an absolute minimum, and all Undertakings could then carry a total stock of all spare parts, and so eliminate delay and give real service to the consumer. I would suggest that all spare parts be coded and numbered similar to those of the motor trade, and so standardize ordering and facilitate storekeeping. Spare parts should be available from the day any new appliance is introduced, as I have known numerous cases of serious delays in obtaining spares when a new type of appliance has been delivered with parts broken.

If total standardization were introduced, I think the requirements of the public would be served by not having more than two designs of each type of appliance, each design to have similar ranges of size and efficiencies, but one would be manufactured for sale as cheaply as possible, while the other would have cost as a secondary consideration, and could have, for example, wider ranges of colours. Improvements as a result of research and investigation of complaints and suggestions could be embodied in new designs annually, when new models would be introduced with national advertising campaigns similar to the existing refrigerator sales policy, thus stimulating public interest. It is realized that sets of adjustments would be necessary for dealing with varying calorific values, but these will probably be standardized as suggested in the Paper by Sir Frederick West, thus simplifying this problem.

In conclusion, I think that total standardization is eventually bound to come about as a natural evolution, but if it is brought about as a result of a far-seeing and progressive policy, both the Nation and the Gas Industry must benefit.

Mr. **F. Caudwell** (Shrewsbury) wrote: In dealing with his subject, the Author has first of all attempted to lift the veil of the future, and endeavoured to picture the position in which we, as a nation, shall find ourselves when peace is once more declared, his assumption being based on our present-day knowledge of the incidence of high taxation and other charges. Bearing in mind the effects on our national life which we have already seen and experienced, one is tempted to ask if the Author has even been successful in putting in a background to the picture. Personally I do not think so.

Mighty forces have been let loose in the world, and it is impossible to foresee what the result will be. In my opinion, however, the available cash resources of the public will be reduced to a microscopic minimum just sufficient to obtain the bare necessities of life. It may be that we shall emerge more permanently totalitarianized. I do not agree that the British public will have learned in the hard school of totalitarian warfare the essential values of home life, which are based on moral and spiritual values. The use of labour-saving appliances in the home, wireless, and the motor car have made available a much larger amount of spare time, the misuse of which has had far-reaching effects.

The design and replacement of houses destroyed by enemy action is, of course, a matter for the Government Department concerned, but one hopes that this will not result in masses of houses of a similar type being erected all over the Country, but that rational standardization will be applied in this direction.

It may be that for some years after the war the selling price of gas will be too high to admit of its use in the home as in pre-war days, and consequently we shall suffer a set-back which will require, if it is to be dealt with successfully, the maximum amount of energy and collaboration on the part of Gas Undertakings.

It has been apparent for some years past that too many types of apparatus of all classes have been put on the market, each one having its own special features recommended by the makers concerned, some bearing the distinctive mark of scientific thought and investigation, and others being mere copies put on the market to under-cut prices. With such a mass of material available, therefore, it had become most confusing both to the Gas Undertakings' officials and to the buying public. Moreover, overhead charges were undoubtedly affected by reason of the fact that stores accommodation had to be increased, and unnecessary clerical labour involved. Many Undertakings were therefore compelled to reduce the number of types of apparatus which they purchased, in itself a form of standardization. There is thus no doubt that, in the interests of all concerned, the standardization and economic production of appliances will have to be considered much more fully than it has been in the past.

From a distribution point of view I should like to see more efforts made to standardize in the realms of cooking and hot water supply. In Table I, showing the classification of gas appliance components, Mr. Rogers admits that standardization of the items in col. (i) presents great advantages and no disadvantages. In col. (ii) I suggest that a definite effort should be made to overcome the disadvantages which may be presented. There are far too many types of tap existing, and surely a standard thermostat is not an impossibility. I would suggest three sizes of range only, and it seems to me that we are then brought within reasonable distance of a standard gas cooker. Similarly with hot water apparatus. There are types of both instantaneous and storage heaters on the market which have been in use for many years, and have been considered as standard by many Gas Undertakings. Gas fires and radiators present rather a different problem. Just before the war there were several excellent improvements put on the market, and had this continued we should no doubt have seen a distinct improvement in heating appliances. The heating load is still far behind the cooking load, and bearing this in mind, I feel that a policy of rational standardization would be best, which would, as Mr. Rogers suggests, leave perfect freedom to manufacturers in design and development.

Summarizing, therefore, I would suggest:

Total standardization: Cookers and hot water apparatus.

Rational standardization: Gas fires and radiators.

We should then be in a much better position to adopt standardized prices.

(To be continued in a forthcoming issue)

Due to the Fact that Messrs. James Stott & Co. (Engineers), Ltd. have had to leave their Offices and Showrooms, at Queen Victoria Street, London, E.C. 4, their Sales Department is now situated at 25, Hill View Road, Hatch End, Middlesex, and the Service and Maintenance Department at 65A, Upton Road, Bexley Heath, Kent.

A General Meeting of the Manchester and District Junior Gas Association is to be held in the Engineers Club, Manchester, on July 19 at 2 p.m. Mr. J. Gaskarth, B.Sc., of Liverpool will read a Paper on "The Effect of the Correction of Gas Volumes on Gas Delivery Figures," and Mr. C. A. B. Woodhead, A.I.C., of Birkenhead, on "Sulphate Reducing Bacteria." The date of the Annual Meeting has been provisionally arranged for Sept. 27.

WAVERLEY ASSOCIATION OF GAS MANAGERS

The Luncheon held in connexion with the Annual Meeting of the Waverley Association is usually regarded as an occasion for the expression of views by our friends across the Border. Even in these days of paper shortage, a report of this year's function is fully justified.

Mr. Wm. C. Campbell presided and was supported by Councillor W. Y. Darling, C.B.E., M.C., D.L., J.P., Edinburgh.

The Chairman announced that a collection for the Red Cross Fund had realized £6 12s 6d., with further sums to come in.

Proposing the toast of "The Gas Industry," Councillor **Darling,** District Commissioner for the South-Eastern Area of Scotland, said that Mr. Jamieson, as they knew, was Regional Gas Adviser and had been most helpful to him. Regional organization was the order of the day. There were certain jobs of organization that had, of necessity, to be on a regional basis. The home and the burgh had their functions and so had the region. A re-classification of industry along regional lines was essential. The Gas Industry, said Councillor Darling, was essentially a peaceful one but had demonstrated its power in war.

Replying, Mr. JAMES JAMIESON said Councillor Darling had indicated how much importance he attached to mutual aid. He had disclosed what he termed weaknesses in their pre-war policy and had given helpful advice on the necessity of formulating now a complete and constructive plan so that they might be able to meet the difficult and probably involved post-war conditions. To-day he had spoken to men who shared his views, who were disappointed at the progress made and dissatisfied that the nation's fuel policy should be moulded, determined, and administered by vested interests, men who were willing to go to the utmost limit in an endeavour to improve and extend that great and notable contribution which the Gas Industry was now making to the fuel problems of the country and to the war effort generally.

Councillor Darling had suggested they should have a planned policy to meet post-war conditions, but it was surely more important that the Government should formulate a National Fuel Policy allocating to each industry its proper place or sphere if they were to escape the chaos and waste of material and effort so much in evidence before the outbreak of war.

In the future science and industry would become more and more the foundations of national security and the basic need of all industry was fuel—fuel for power and heat and light. The war was teaching them many lessons, social, political, and economic. Whether they would learn and apply them as fast as the idealists among them would like was another matter. It was premature to make any attempt to state the precise lines of this country's future fuel policy, but faced with a world situation in which cheap fuel was the very foundation of their independent existence and with a prospect of their native fuel becoming increasingly costly to get, it seemed logical to suggest that they should stop digging out coal as fast as they could, using much of it wastefully and sending as much as possible abroad at cut prices. Instead, they should process all the coal in their own country, not only to provide more efficient fuels for home use, but to yield for export commodities whose value was high in proportion to the cost of the fuel used in their manufacture.

Of all the aids Nature had in the past bestowed on Great Britain with exceptional favour there was none that conferred more distinctive benefits upon the nation than the gift of coal, and yet there was none that ignorance had more wantonly squandered. When legislation decreed that this country should accumulate riches by manufacture rather than by agriculture, it was quickly realized by men of understanding that there was a vital relationship between fuel and foodstuffs. That relationship did not unfortunately exist to-day, and they were probably the only land in the world with such resources at their disposal who were neither self supporting in foodstuffs nor in fuel.

The production of liquid fuels was a serious national problem, for many existing facilities depended on liquid fuels and they had no native resources. Before the war there was much argument as to the desirability of endeavouring to produce oil from coal and the general conclusion was that the project was "uneconomic." What was actually meant was that in terms of our national currency a gallon of natural petroleum cost less than a gallon of synthetic liquid fuel. At the conclusion of hostilities they could not expect to retain more than a small fraction of the foreign credits and investments that formerly paid for much of our imports, and they would have to decide whether to supply every man, woman, and child with 75 gallons of petroleum or with its equivalent in foodstuffs. The choice would be a serious one for a nation that did not grow sufficient food for its own sustenance yet imported fuel while its own men were unemployed and its own resources wasted. It would seem logical therefore that liquid fuels should, when technically possible, be produced from coal, provided the cost of the product did not exceed the value to the user. That was not in doubt to-day.

The Report of the Falmouth Committee was by no means antagonistic to the project of producing oil from coal, but regarded existing independent processes as inappropriate for defence purposes. The establishment of an oil from coal industry as an adjunct to another essential industry would alter the whole aspect of the matter. In that task, they, as an Industry, could do much to help in the conservation of their fuel resources and the provision of cheap and convenient supplies of fuel for their industries and the comfort of their homes.

Councillor Darling had referred to the speaker's appointment as Regional Gas Adviser. He understood that south of the Tweed most of the mutual aid schemes confined themselves to undertakings with an annual output of 200 million cu.ft. or over. For Scotland he had roped in all undertakings irrespective of size and importance. He suggested that that was the true essence of mutual aid. Since the scheme was formulated the organization had been brought into action on a few occasions, one of which was on a fairly large scale. He had the authority of the engineer of that stricken undertaking to say that it functioned quickly, in orderly manner, and most effectively. Soon after the call for aid was issued, transport, fully equipped with men, material, and iron rations to feed the entire squad for two days, and technical advisers to supervise operations, was on the spot. That was a creditable performance, indicative of the value of co-operation, and showing that if applied with foresight there was little wrong with their mutual aid scheme.

Mr. **J. W. Napier,** M.B.E., M.I.Chem.E., Alloa, proposed the toast of "Kindred Associations." He said he wished to pay tribute to the excellent work of the parent body, The Institution of Gas Engineers. It was strong in personnel of administration and was of great national value. He wished to stress the values attached to the work of research under the control and direction of the Institution. An industry without the research work of the chemist and the engineer only followed in the rear where competition prevailed. The one criticism he had to offer—and it was offered in no indulgent term—was that the noble Scot holding appointments in Scotland had been strangely absent from the top table of the Institution Officers. This delayed action, however, would soon be righted, as they now had Mr. Jamieson as a Vice-President nearing the President's Chair. He felt sure it was in accordance with their wishes that he should express their appreciation of Dr. Braunholtz, the Secretary, for his masterly management of the affairs of the Institution.

Education for the Industry in Scotland was now regarded as an essential to promotion. This requirement was of vital importance, as it would sort out into higher values the worth and dignity of the profession. On several occasions in the past he had emphasized the value of university and college training for the profession of gas engineer and manager. Learning and thinking were valuable accomplishments and university education and culture formed a good foundation. One of the outstanding values of the North British Association was the contribution made to the literature of the Industry from the William Young Memorial Lectures by men of eminence in the Industry. He ventured to say that no other gas association could claim the possession of such outstanding contributions in its transactions.

There were two things, however, about the North British Association which he did not like. The first was its title. He did not like the words "North British." They sounded parochial and belonged to the last century. To-day the words were remembered only as the name of a Railway Company now defunct, and of a huge hotel occupying a place in one of the most famous streets of the Empire. The other matter he did not like was that members absent from annual meetings were dispossessed of their right to give voice to appointments made. This should be righted.

He might be permitted to refer briefly to the work of the National Gas Council. The administrative worth of the Council was of the first order. The legislative affairs of the Industry were directed with effective power and success. Their debt to the Council was far in excess of the monetary contributions made by individual gas undertakings. But he would like to introduce a fresh conception of the duty of the Council. Its affairs undoubtedly belonged to the whole Industry and should not be confined within the closed doors of membership. He would quote from a recent Paper presented to the Institution by the Editor of the "GAS JOURNAL." Mr. W. Rupert King asked for a larger measure of confidence than has been given the Press in the recent past. "We do not," he observed, "by any means claim a right to all the secrets of Gas Industry House, but it is reasonable to ask for sufficient access to inside information to enable us to weigh up and pass on to wider circles a reasonably accurate picture of current situations. Yet such disclosures as have been made in recent years have only too often been accompanied by a condition that they are not for discussion, or, worse still perhaps, we have been confronted with a *fait accompli* and asked to give it a 'good Press.' The Editor's dilemma in such cases is that he must either give an obviously inspired and consequently ineffective blessing or he must stir up dissatisfaction with a course which, for better or worse, is already set and a situation which is probably irretrievable."

My proposal, continued Mr. Napier, is that the National Gas Council, as the policy holders of the Gas Industry, should now open wide its transactions to the Press and through it to the whole Industry instead of confining them completely to members only. The Council claims that its membership is a near approach to 100% of the gas manufacturers in Great Britain. This may be a new thought, and I commend it to the consideration of Sir David Milne-Watson, for the complaint of the Gas Press is not without warranty.

In making reference to the work of the British Commercial Gas Association I appreciate to the full its valuable force in publicly proclaiming the resources of gas for industry and domestic purposes. Its birth and early upbringing took place under the auspices of a

Scotsman, Mr. W. M. Mason. Its history is a record of progress and influence. But I am not prepared to give a high award to the Association for the kind of literature for propaganda purposes which it has been sending out for the past few years. It appears as if some new influence has been at work and this in the wrong direction. I regard a great deal of the subject matter as well as the illustrations —some of which are neither artful nor beautiful—as highly unsatisfactory and unacceptable to gas officials. I have every confidence in condemning a large portion of this propaganda literature as not best fitted to the advertisement of gas. I would express the hope that when the war is over a new administration with a fresh spirit will exercise the duty of carrying on the Association's work with a dignity of purpose.

Throughout England and Wales there have existed Industrial Gas Development Centres, but Scotland has been left out and is isolated from this source of valuable information. It is true that an attempt to remedy the defect was made a year ago in having a Bureau of Information, but the fact remains that there is no Industrial Development Centre in Scotland. I am prepared to believe that gas undertakings themselves are not without fault. The only way of becoming subscribers is for undertakings in Scotland who wish to join up to do so with some of the English Centres and so reap the full benefit. The main fact, however, remains that the B.C.G.A. is responsible for the distribution of the knowledge of the uses of gas in industry and Scotland has been left out for at least ten years. I commend this to the attention of Mr. W. J. Sandeman, Chairman of the Executive Committee.

Within the compass of my toast I wish to include the Society of British Gas Industries. The work of the Society, while business and commercial, is of a high order, and is directed to the invention and progress of Gas Industry manufacturing plant as well as apparatus for the use of gas. The work of the Society covers a large field. Here again, the work of research by very many firms enters into the economics of gas production, and the evolution of gas-consuming apparatus is largely in their hands. To prove the worthy recognition shown to this Society one has only to mention that six of its members are on the Gas Research Board.

I now refer to another Association never yet included, to the best of my recollection, in a toast like this. I refer to the Press Association. An industry with a good Press is in possession of a stronghold. It is Industry's right hand. But I should like to see our technical journals with an editorial influence acting as leaders of opinion and not simply as reporters for the reproduction of subject matters of technical interest in large mass. We all know the power of the daily Press in matters political and social. I should like to see the influence of a London *Times* or the intellectual treasury of a *Blackwood* in the Press of our Industry.

The Editors of our Technical Press should be more than mere technicians displaying the knowledge of others throughout their pages. They should be eminent and individual forces. There are numerous accomplishments that go to make a newspaper or journal of infinite value in forming opinions. If Editors are to adorn their high office, they should be men of high literary taste, men who are disciples of great thinkers and writers, possessed in some measure of the philosophy of a Carlyle and not without poetic instinct and love of art. Without these finer qualifications which make for eminence, our editors' pens will be dull and dreary. In his recent contribution the Editor of the "GAS JOURNAL" made the accusation that "the Industry in recent years has tended more and more to verbosity." I suggest that the editors should exercise their own war weapons, compress the subject matter into substance of real value, and excise the things that do not matter. The complete contributions can very suitably be left to appear in the transactions of each Association.

The same Editor is anxious to have the views of the Industry as to whether they serve better sitting in judgment on all available Papers instead of struggling to publish them as a whole as in the past. I do not hesitate to express the view, and I have been intimate with the Press of the Gas Industry from early boyhood—more than half a century—that our journals are not of the strength they were long ago. I frequently referred to the Gas Industry as possessing the best journalistic literature, but I do not feel that I can make this award at the present time. An attempt is being made in some journals to copy the light fantasy of a section of the daily Press. This kind of matter should be left out.

In conclusion there is another matter to which I wish to refer and which is dear to myself. The year 1941 marks the centenary of the birth of a great Scotsman and great scientist of industry, one whose life is indissolubly connected with the Gas Industry and the coming of the vertical retort. I refer to William Young. He was a true Borderer. The Waverley Association is a Border Association—how else could it have assumed its name? This name of Waverley is linked up with that of Sir Walter Scott, writer of the Waverley Novels. William Young's father was gas manager at Selkirk, which was the birthplace of his famous son. I now suggest that in order to mark this notable centenary this Border Association should commemorate the name of William Young by investing your President with a Badge of Office. I suggest it take the form of a gold and enamel medallion with William Young in all his strength of feature and characteristic face exhibited thereon. The name of the Association could be inscribed on the obverse side along with a suitable quotation from a Border ballad. I should like very much and would regard it as a singular honour to myself as an Edinburgh man whose family lineage belongs to the Borders, to present this Association with such a badge. I hope this may meet with the approval of your Council, and I make another suggestion that your annual meeting next year or in some future year might fitly be held in Selkirk.

A great deal of William Young's practical work was carried out at the oil works of the Clippens Oil Company, Loanhead, and it is an interesting recollection for me to remember that my first position in industry was that of an assistant with the Oil Company, having superintendence over the vertical shale oil retorts.

Mr. **R. D. Keillor,** Greenock, President of the North British Association, replying, said that Mr. Napier had mentioned a formidable list of kindred organizations. He had criticized the Gas Press, but personally he had found the Press kindly and helpful and had nothing but praise for it. He agreed with Mr. Napier that a happier name than "North British" might be found for his Association. But if they called it the "Scottish Association," how would the Waverley Association feel about that? Of course the Waverley Association could always join up with them. Mr. Napier had objected to his absence from their annual meetings costing him his vote. This was an unfair criticism. Those who could not take the time or trouble to come to the meetings should not criticize those in office. Mr. Napier's suggestion about commemorating the late William Young made him say that the President of the North British Association in 1911, when the William Young Lectures were inaugurated, would have favoured the idea. He sincerely wished that the Waverley Association would join up with The Institution of Gas Engineers.

Gas Consolidation, Ltd.

Chairman's Statement

The following is a statement by Major Julian Day (Chairman of Gas Consolidation Ltd.), circulated with the Report and Accounts to be presented at the Annual General Meeting of the Company to be held on July 22 at 15, Moorgate, London, E.C.:

In accordance with the wishes expressed by the Board of Trade I shall refrain from reference to the results of any of the operating companies and will confine my review to the financial results of the holding company.

The Company's balance-sheet shows few changes, the only one calling for comment being the increase of £7,130 in investments in subsidiary companies. This is accounted for almost entirely by the acquisition of £7,000 5½% Redeemable Preference Shares of one of the subsidiary companies.

The Revenue Account

The revenue account shows that the dividends on investments (gross) are almost precisely the same as for the preceding year. There have been fluctuations in the amounts paid in dividends by subsidiary companies, but, in the aggregate, the total is substantially the same, which tends to illustrate the relative stability of an investment covered by the operating results of a group of companies as compared with an investment in the Ordinary Capital of any single operating company. Other income shows an increase of a little over £2,000. On the debit side of revenue account, expenses are approximately the same as for the preceding year, and provision has again been made of £1,000 towards writing off expenses of the issue of Debenture stock.

There is, however, an increase of £4,159 in the amount required for Income Tax. Thus the amount carried forward to appropriation account is £21,918, compared with £24,209 in the last accounts.

Dividend of 5%

Dividends at the rate of 5% per annum, less Income Tax, are recommended on the "A" and "B" Ordinary Shares, being at the same rates as those paid last year. As shown in the appropriation account, the net amounts required for all dividends are less owing to the incidence of a higher rate of Income Tax. Thus the balance, subject to final dividends on the Ordinary Shares, is some £1,300 higher at £18,363. As shown in the Directors' report, after deducting the amount required for the dividends now recommended, the balance to be carried forward to next year is £11,624, compared with £8,622 brought forward from the preceding year. These results are satisfactory.

The close association of the Company with the Severn Valley Gas Corporation, Ltd., is well known; both companies are operated under one headquarters organization. Accordingly, Mr. S. G. Wood has been appointed Deputy Chairman and Mr. G. M. Gill Managing Director, following similar action taken by the Severn Valley Gas Corporation. Our thanks are due to these gentlemen and to the staff and employees of the constituent companies, as well as to the headquarters' staff, for the loyal work they have done in maintaining a high standard of service to consumers at a time when so many difficulties have had to be overcome.

Coal Supplies and Industry

Public attention has been drawn recently to the uncertainty in the outlook for supplies of coal. The importance of adequate supplies to the Gas Industry cannot be overstated, for scarcity of coal could only result in some form of restriction of the use of gas to a very large number of consumers, including important industrial undertakings. This is a matter of grave concern to the Board, but I can assure you that every effort within our power is being taken to minimize the danger.

Gas Products Prices

The London Market

July 14.

There are no changes to report in the prices of Tar Products, which remain at about the following levels:

Pitch nominal; creosote 4¾d. to 5d.; refined tar 3¾d. to 4d.; pure toluene under the Ministry of Supply Toluene No. 2 Order 2s. 5d.; pure benzole is 1s. 10d.; 95/160 solvent naphtha is 2s. 5d. to 2s. 8d.; and 90/160 pyridine 13s. 6d.; all per gallon naked; refined crystals naphthalene £23 per ton in bags; all prices *ex* Makers' works.

The Provinces

July 14.

The average prices of gas-works products during the week were: Pitch and Crude Tar,* Toluole, naked, North, 1s. 10d. (controlled by the Control of Toluene No. 2 Order, July 5, which fixes the maximum price at which this material may be sold). Coal tar, crude naphtha, in bulk, North, 10d. to 11d. Solvent naphtha, naked, North, 1s. 9d. to 1s. 10d. Heavy naphtha North, 1s. 6d. to 1s. 7½d. Creosote, *ex* works, in bulk, North, liquid and salty, 4½d. to 4¾d.; Scotland, 4¼d. to 4⅜d.; low gravity, 4¼d. to 4⅜d. Fuel Grade, 4d. to 4¼d. Carbolic acid, 60's, 3s. 7½d. to 3s. 9d. Naphthalene, £12 to £15. Salts, 70s. to 80s., bags included. Anthracene, "A" quality, 4½d. to 4¾d. per minimum 40% purely nominal. Heavy oil: Unfiltered anthracene oil (min. gr. 1,080), 5¼d. to 5½d.; filtered heavy oil (min. gr. 1,080), 5¾d. to 6d.; heavy anthracene oil gr. less than 1,080, 6d. to 6¼d.

*In regard to pitch and crude tar prices we would ask readers to refer to the editorial note in our issue of Sept. 4, 1940, p. 404.

Tar Products in Scotland

GLASGOW, July 12.

Trading continues active in this district with prices showing no material alteration.

Refined tar: Considerable supplies are leaving the works with home price at 4¾d. to 5d. per gallon, while for export value is called round 3½d. per gallon, both f.o.r. naked.

Creosote oil is quietly steady at the following prices: Specification oil, 5d. to 5¼d. per gallon; low gravity, 6d. to 6½d. per gallon; neutral oil, 5¾d. to 6d. per gallon; all *ex* Works in bulk.

Cresylic acid is still in good call for both home and export with values to-day as under: Pale, 99/100%, 3s. 1d. to 3s. 3d. per gallon; Pale, 97/99%, 2s. 10d. to 3s. per gallon; Dark, 97/99%, 2s. 6d. to 2s. 8d. per gallon; all *ex* Works in buyers' packages.

Crude naphtha remains unchanged at round 6½d. to 7½d. per gallon *ex* Works in bulk, according to quality.

Solvent naphtha: 90/160 grade is 1s. 8½d. to 1s. 9d. per gallon and 90/190 Heavy Naphtha is 1s. 4½d. to 1s. 5½d. per gallon.

Pyridines: With little business passing prices are nominal at about 14s. per gallon for 90/160 grade and 16s. per gallon for 90/140 grade.

Gas Stocks and Shares

The Stock Exchange had another good week and a general upward movement took place in the security markets with a keener demand in some of the more speculative sections. British Funds were particularly strong and 2½% Consols closed 1 higher on the week at 82½. Home rails were a trifle irregular, but the undertone remained firm. Industrials contributed a number of bright spots, especially among tobaccos, and coal, iron, steel, and shipping shares. Towards the close oil shares became more active than for some time past, the Syrian news doubtless assisting. After a long period of stagnation rubber shares also looked up, a few of the leaders hardening, though business was still very small.

Gas stocks and shares were again in good demand, and as will be seen in the tables below a number of prices responded accordingly. South Metropolitan headed the list with a further gain of 8 points to 50½, while Gas Light units, which were heavily supported, closed 1s. 3d. up at 12s. 9d. After a long period at the lower figure Commercial also moved up, while at the Provincial Exchanges Newcastle units gained 6d. to 18s. There has been a comparatively large turnover in gas securities during the past two weeks and a holding of any of the low-priced ordinaries as a lock up should not go far wrong.

The directors of the United Kingdom Gas Corporation are recommending a dividend of 4% (against 5%) on the ordinary shar for 1940. Net revenue is returned at £94,398 (against £122,443 for 1939), and after providing for dividend and £5,096 towards writing off capital increase expenses, the balance forward is £14,178 as compared with £14,150 brought in. The shares fell 6d. last week to 12s.

The following price changes took place during the week:

OFFICIAL LIST

Barnet Ord.	98—103	+3
Commercial Ord.	25—30	+1
Gas Light Units	12/3—13/3	+1/3
,, 3½ p.c. max.	37—42	+2
,, 4 p.c. Pref.	57—62	+2
,, 3 p.c. Deb.	69—74	+1
Imperial Continental	51—56	+3
South-Eastern Gas Corporation Ord.	10/—12/—	+—/6
,, 4½ p.c. Pref.	13/6—15/6	+—/6
,, 4 p.c. Pref.	11/6—13/6	+—/6
South Metropolitan Ord.	48—53	+8
,, 6 p.c. Pref.	72—77	—½
South Suburban Ord.	57—62	+2
,, 3½ p.c. Pref.	79—84	+1
United Kingdom Gas Corporation Ord.	11/—13/—	—/6
Wandsworth Cons.	60—65	+2
Watford and St. Albans Ord.	85—90	+1

PROVINCIAL EXCHANGES

Long Eaton 5 p.c. Pref. (x.d.)	9—11	June 23
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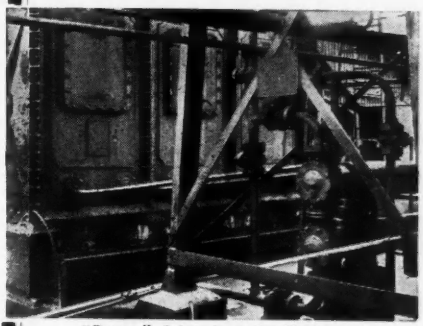
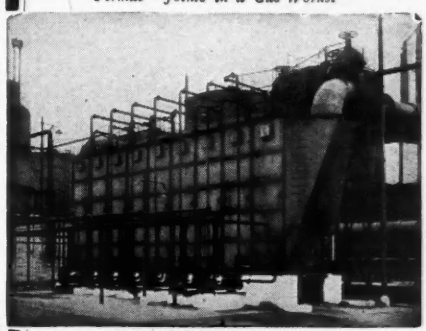
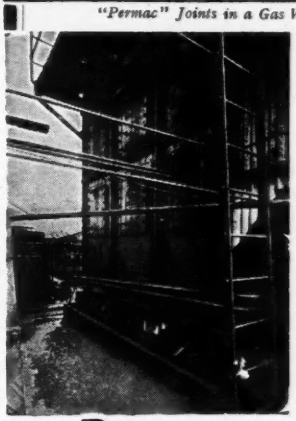


"Permac" Joints in a Gas Works.



"Permac" Joints in a Gas Works.



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Is not to stir without great argument,
But greatly to find quarrel in a straw
When honour's at the stake.

Shakespeare (Hamlet).

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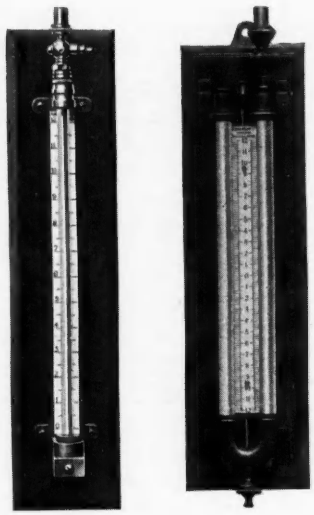

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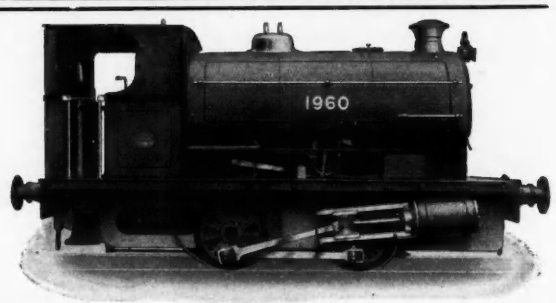

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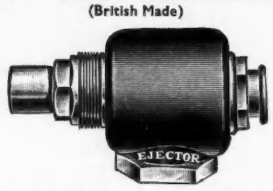

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